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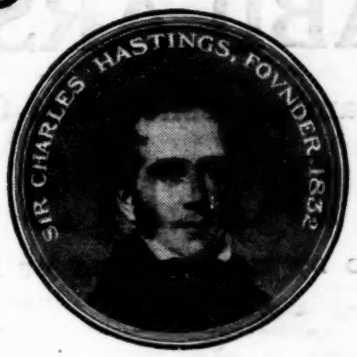

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A British Medical Association Lecture

ON

THE CAUSE AND TREATMENT OF DYSPNOEA IN CARDIO-VASCULAR DISEASE.*

(Abridged.)

BY

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DYSPNOEA is an extremely common symptom in cardio-vascular disease; it is, in fact, so common that it is almost held to be pathognomonic of some cardiac disturbance.

NATURE AND CAUSES OF DYSPNOEA.

What is dyspnoea? The following short definition may be given: Dyspnoea is the consciousness of the necessity for increased respiratory effort.

How is dyspnoea produced? If we confine this question to the diseases under consideration we may say that it is usually produced by two causes: (1) want of oxygen; (2) carbon dioxide retention, relative or absolute. Either of these or both must occur in the cells, which represent the functioning units of the body. The types of dyspnoea produced by these two factors are somewhat different, and in order to explain the differences it is best to take them up separately. If either condition be produced suddenly the symptoms will be much more violent than if the process were an insidious one.

In oxygen want there is always the question of the quantity or partial pressure of carbon dioxide present in the blood and also in the cells. If the oxygen want is acute, there remains a certain amount of carbon dioxide which has to be got rid of, as oxygen want makes the respiratory centre more irritable than normally to a given partial pressure of carbon dioxide. This has an important practical application. In mines where there is a rapidly increasing amount of black-damp, the presence of a sufficient amount of carbon dioxide gives the miner warning, as it produces panting and respiratory distress. In slowly increasing black-damp without carbon dioxide he gets rid of the carbon dioxide in his body by moderate over-ventilation and may lose consciousness without any appreciable distress.

The uncomplicated effect on respiration of increased carbon dioxide is best shown in acidosis, such as may occur in advanced cases of diabetes mellitus. In such cases, although the carbon dioxide be not increased, the hydrogen-ion concentration of the blood is increased, and it is by acting in a similar manner that carbon dioxide influences respiration. If the oxygen saturation of the blood be decreased and the carbon dioxide increased respiratory failure is apt to occur very quickly. This is really asphyxia, as is found in acute obstruction of the larynx. In such circumstances there is the typical deep purple cyanosis of suffocation.

Dyspnoea in Cardio-vascular Disease.

Dyspnoea in cardio-vascular disease may be produced in two ways. One may be called the pulmonary method, and the other the circulatory method. In the pulmonary method anything that interferes with the proper aeration of the blood as it passes through the lungs may produce it. If the lungs remain normal, there being no oedema, congestion, nor gross exudate into the pleural cavity, the arterial blood will contain a normal quantity of oxygen. There is no decline of oxygen saturation of the blood as it passes to the systemic arterioles. We have been able to show this quite conclusively by examining the arterial blood of many cases of auricular fibrillation, valvular disease, and myocardial degeneration with and without pulmonary complications. If oedema of the lungs should develop there will occur a decrease in the oxygen saturation of the arterial blood. This may usually be inferred from the physical signs in the lungs and the degree of cyanosis. If oxygen be given under these conditions the saturation of the arterial blood will as a rule rapidly return to normal. Even at rest certain of these patients have violent dyspnoea, orthopnoea, and Cheyne-Stokes breathing. As soon as oxygen is given the symptoms disappear and the patients become quite comfortable. At the same time there is no immediate change in the character of the physical signs in the lungs. This would indicate that by increasing the partial pressure of oxygen in the alveolar air from 100 to 280 mm. the diffusion of oxygen through the swollen alveolar cells and the alveolar exudate is greatly increased. Such an increase would naturally be expected. For this reason the blood has less difficulty in becoming adequately saturated with oxygen. In auricular fibrillation we found no accompanying reduction in the pulse rate to account for this improvement. Certain cases had very pronounced cyanosis with delirium, but on inspiring air with a high partial pressure of oxygen the cyanosis and delirium disappeared and the oxygen saturation of the arterial blood returned to normal.

These are cases of what one might call the pulmonary type of dyspnoea and cyanosis in cardiac disease. It is the dyspnoea which occurs when there are numerous crepitations and perhaps sonorous râles in the lungs. These signs are due to swelling of the epithelium of the bronchioles and alveoli and exudate into the alveolar spaces—conditions which interfere with the respiratory function. On the other hand, there may be a moderate hydrothorax compressing part of one lung through which the blood is still circulating. If that be the case the compressed lung will not aerate, the blood returning would merely pollute the fully aerated blood from the rest of the lungs. It is only in cardiac cases with indications of such pulmonary lesions that the administration of oxygen will relieve the dyspnoea, cyanosis, and other pulmonary symptoms.

On the other hand, there is another factor which must not be overlooked. This is the influence of vascular engorgement on the respiratory movement and pulmonary ventilation. This point I will defer until I take up the question of the circulation as a whole.

Effect on Cells.

We now come to consider how interference with the general circulation affects the cells of the various organs, because it is the cell, as it occurs in its aggregate to form the organic units or functioning organs, that gives rise to pathological symptoms or signals of distress. As is well known, interference in the local circulation, such as results from occlusion of an artery, may produce death of the distal portion. This is really local asphyxia. Such vascular interference may be partial or complete, and thus the consequences may vary in degree—as, for instance, hemiplegia or mental degeneration, gangrene of the toes or "intermittent claudication," rupture of the heart or angina pectoris. On the one hand the myocardium and the brain may continue to function normally until renal degeneration due to arteriosclerosis leads to a general breakdown. You may, on the other hand, have stenosis or obliteration of a coronary artery. If a sufficient quantity of the myocardium is asphyxiated then the myocardial symptoms may predominate. In other circumstances symptoms due to cerebral degeneration may play the principal part. If, however, the arteries are fairly healthy, but some valvular or myocardial lesion interferes with the general circulatory efficiency, then widespread symptoms may develop. In so far as such lesions reduce or limit the amount of blood circulated per minute in relation to the amount of work attempted, so symptoms occur. In the average individual at rest the blood flow per minute through the heart varies between 5 and 8 litres according to sex and development. An increased circulation is usually accomplished by an increase of the cardiac rate, but in some instances this is also brought about by an increased output per beat. The systole is more complete. Therefore not only is the rate to be taken into consideration but also the completeness of the systolic contraction. Barcroft and others have reported a case of acute paroxysmal tachycardia where the cardiac rate increased to 185. The minute blood flow was one-half what it was under normal conditions, and the output per beat decreased from 76 c.cm. to between 16 and 13 c.cm.

* Delivered before the Dundee Branch of the British Medical Association, March 14th, 1923

In cases of auricular fibrillation and flutter a similar sequence of events occurs, although the decrease in the blood flow per minute is not as a rule so pronounced. Usually when the ventricular rate is increased above 100 there is a distinct decrease in the output per beat. This, of course, becomes much more apparent as the rate increases.

In mitral stenosis without evidence of myocardial disease, such as great cardiac enlargement, there is a very pronounced decrease in the output per minute and also on each systolic contraction. This decrease is particularly obvious when the individual attempts to do work. Tachycardia very rapidly supervenes and the blood flow may increase from 2 litres to as much as 5 litres per minute. This as a rule makes it necessary that the pulse rate shall increase two and a half times—that is from 70 to 180. The output per beat has never yet been found to be increased in this condition. Such a limitation of cardiac output necessarily limits the amount of exertion possible; in fact, in certain cases merely walking slowly about the room produces severe symptoms.

It might be supposed that in patients with greatly enlarged heart, but without any evidence of valvular disease, as well as hypertrophy of the wall, the capacity of the ventricular cavity would be greatly enlarged. If such a heart were completely emptying itself at each systole the amount of blood circulated per minute would be much above normal. It is found, however, that this is not the case, the output per minute being approximately normal if there are no symptoms at rest. On exercise, however, the symptoms may become extreme, while the cardiac output per minute is but slightly increased, although the cardiac rate may be greatly increased. When cardiac failure occurs there is a sharp decline in the output per minute as well as in the output per beat. The obvious conclusion is that the ventricular systole in these circumstances is not complete. Instead of the ventricle expelling 100 c.cm. per systolic contraction, as is found to occur frequently in these cases of enlarged heart, the output per beat may be only 15 to 25 c.cm. This occurs in spite of the fact that physical examination may give evidence of the cardiac dullness being increased. This is probably what occurs in acute and chronic cardiac failure. In such circumstances the ventricle on each contraction does not completely empty itself, and there is consequently a residue of blood left in the ventricle at the beginning of the diastole. This corresponds to the difference in the capacity of the ventricular cavity and the amount expelled at each systole. As the amount of this residue increases, so the symptoms of cardiac failure become more pronounced.

This decrease of circulation rate, whether due to pathological tachycardia, mitral stenosis, or myocardial inefficiency, is probably one of the most important factors in the production of symptoms in cardiac disease, but the question naturally arises as to how a decrease of blood flow would produce symptoms. There are many other symptoms besides dyspnoea—fatigue, exhaustion, vertigo, cyanosis, vomiting, loss of consciousness, etc. All these symptoms may be produced by a deficiency of oxygen and an increase of carbon dioxide in the cells. It is well known that the rapid circulation of blood through a part keeps up the partial pressure of oxygen and diminishes that of carbon dioxide. If, on the contrary, the blood flow becomes slow, the partial pressure of oxygen diminishes and that of carbon dioxide increases. This brings about in the cell a condition of cellular asphyxia and acidosis. In such circumstances there occurs a swelling of the cell, and fluid, chlorides, bicarbonates, and other salts, pass from the blood into the surrounding tissues and tissue spaces. The blood coming from the part becomes more concentrated and acid. This, we believe, is a most important contributing factor in the production of oedema and other symptoms in cardiac cases.

Such a condition occurring in the cells would affect the respiratory centre as well as other portions of the body. The severity of the symptoms will be influenced not only by the degree of slowing of the circulation but, as has already been pointed out, by the suddenness of the disturbance. If the organism be given time to accommodate itself to the new conditions, or if the new conditions develop slowly, it will be found that the skeletal blood flow is very much reduced. This is brought about in order that the blood supply to the nervous system, suprarenals, heart, liver, and other vital organs, may be sufficient. If the general blood flow is still further reduced symptoms will then develop even when the body is at physical rest. If exertion be undertaken the muscles as functioning organs will require an increased blood supply which can only be provided at the cost of the blood supply to the viscera. Therefore symptoms will appear even though they were not present during the resting state. Consequently it can be seen that the symptoms in cardio-vascular disease are merely an index of the ratio between the blood flow and the amount of work done at the moment. The severity of the symptoms in relation to the work done bears a direct ratio to the inadequacy of the general circulation. From the severity of the symptoms and the appearance of the patient one can obtain a much better working index of the severity of the lesion than from the physical signs.

Late Symptoms of Cardiac Failure.

As cardiac failure progresses symptoms appear even at rest. There may be constant cyanosis, orthopnoea, and varying degrees of Cheyne-Stokes breathing. It has been demonstrated by Haldane, Meakins, and Priestley that the recumbent position is more apt to lead to irregular respiration than is the upright one. Further, that any interference with the pulmonary expansion or ventilation aggravates this respiratory irregularity. This may be caused by anything which interferes with the action of the diaphragm, such as hydrothorax and ascites. In addition there is the important factor of pulmonary engorgement. The lung has somewhat the character of an erectile tissue, and with engorgement or exudate into its spaces its elasticity is very much diminished. That such limitation of expansion, and therefore of ventilation, occurs in cardiac cases is very well known and can be demonstrated by the great decrease in the vital capacity of the lungs. There is no disease where this is diminished to such an extent as in cardiac failure.

Therefore when the cells of the body, and with them those of the respiratory centre, are suffering from a more or less severe asphyxia due to diminished circulation, one of the natural responses is by an increased pulmonary ventilation. This can best be accomplished by the patient assuming the upright position. With this increased capacity for breathing, over-ventilation occurs and the amount of carbon dioxide removed is greater than the oxygen taken in. A period of apnoea, therefore, will ensue, which in its turn is followed by a period of hyperpnoea, and thus more or less pronounced periodic or Cheyne-Stokes breathing is produced.

Dyspnoea in Arterial Disease.

In cases of arterial disease without evidence of a primary cardiac lesion, dyspnoea, orthopnoea, and Cheyne-Stokes breathing may frequently occur. In these cases the interference with the blood flow results from arterio-sclerosis with diminution in the number of arterioles as well as a decrease in the lumen in the larger vessels. As a result increased blood pressure usually ensues. This in time may show a secondary decline due to myocardial failure, and consequently the local blood supply is decreased. There is cellular asphyxia, which in turn stimulates a temporary increase of the blood pressure and therefore of the local blood flow. This for the moment supplies the cells with the necessary quantity of oxygen, but the hyperpnoea resulting from the cellular asphyxia produces an increased elimination of carbon dioxide, and as a consequence a condition of acapnia is produced leading to a period of apnoea. In this manner periodic breathing is perpetuated. The acute attacks of dyspnoea and the violent periods of hyperpnoea in this type of periodic breathing are probably the symptoms which occur in so-called cardiac asthma.

TREATMENT OF CARDIO-VASCULAR DYSPNOEA.

In regard to treatment, it is necessary to have a clear understanding of the underlying conditions producing dyspnoea in order that the symptoms may be relieved. As they are fundamentally due to lack of oxygen in the cell it would be naturally assumed that they can be relieved by supplying oxygen. In cases where this lack is due to an exudate into the alveoli or swelling of the alveolar mucous epithelium, and in those cases where engorgement of the pulmonary tissues prevents adequate expansion, increase of the partial pressure of oxygen in the alveolar air by enriching

the inspired air with oxygen usually, if not always, gives relief. On the other hand, when the symptoms are due primarily to a slowing of the whole circulation or a circulatory deficiency due to a local vascular lesion, the administration of oxygen may have little or no effect. The reasons for this would seem to be self-evident. In certain cases, however, the administration of oxygen may give relief when not expected to do so; on the contrary, its failure to be efficacious is sometimes experienced when a good result would be most expected. A more thorough examination of these cases usually indicates that a combination of these causes is operative. To what extent either factor predominates may, however, be difficult to ascertain.

If the partial pressure of oxygen in the alveoli is to be increased the inspired air must be enriched with oxygen by the time it enters the nasopharynx. This necessitates the administration of a sufficient quantity of oxygen a minute by some apparatus which will ensure its being inhaled. The placing of a funnel one inch from the patient's face will not accomplish this. In our experience only two methods are efficacious—by the use of a fairly tight-fitting mask, or by introducing a rubber catheter through the nose into the nasopharynx. Through this catheter there is passed an adequate supply of oxygen. The supply is frequently regulated by, in lieu of some better method, bubbling the gas through a Wolff bottle or other similar contrivance. In order that a sufficient quantity shall be administered it must enter the bottle through a tube of at least 1 cm. bore, and the bubbles must be so rapid as not to be countable.

The use of oxygen, of course, does not remove the necessity for adopting all other means of treating cardiac failure, and by no means the least important of these is physical and mental rest. It is remarkable how patients do improve by good nursing and general comfort. It would appear that the reason for this is the conservation of circulatory energy for those vital organs which of necessity require a good blood supply.

The employment of drugs which increase the cardiac power is not to be ignored. Of these there is, to my mind, only one which is of value, and that is digitalis. The indications for its use and the method of its administration must be left for consideration at another time.

Many of the observations upon which these conclusions have been based were undertaken in the Department of Therapeutics, Edinburgh University, in collaboration with Drs. Davies, Dautrebande, and Fetter.

THE EFFECT OF HEAT UPON OPERATIONS FOR EXOPHTHALMIC GOITRE.

BY

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THAT the results of operative treatment in many cases of exophthalmic goitre are satisfactory is now generally admitted. Until some fifteen or twenty years ago the danger of such an operation was, however, so great that few physicians felt justified in advising it. To-day the results have been so enormously improved that the mortality is no higher than that of other major operations. At the discussion of the Royal Society of Medicine in 1921,[6] and again at the meeting of the British Medical Association in Glasgow, it was generally agreed that the mortality was somewhere in the region of 5 per cent. In the hands of individual surgeons it has often been lessened considerably below this. Romanis[5] was able to show a mortality of only 2.4 per cent. in a series of 250 cases, and the latest statistics from the Mayo Institute published by Pemberton[4] record a series of 1,093 operations with 11 deaths—that is, a mortality of 1 per cent. All who have operated on large numbers of these cases feel, however, that in spite of their care and attention to detail there is an element of uncertainty in the result which is absent in other cases. My own experience has been that although these cases can be divided into definite groups, one of which has a higher death rate than the others, yet now and again a death will occur when least expected. This feeling of uncertainty and anxiety has been expressed also by Berry,[2] Dunhill,[3] and Romanis,[5] and all are agreed that there is some factor which is at present not fully understood.

If the causes of danger in the operation be analysed, it is possible to appreciate not only what are the means by which so much improvement in the operative results has been obtained, but also which is the factor at present uncertain and to which attention must be given in future. Pemberton[4] has well analysed these dangers. He classifies them into the three following groups:

1. Those directly resulting from the disease and the effects of the disease.
2. Those directly due to accidents such as haemorrhage, pulmonary embolism, etc.
3. Those the joint result of disease and accident.

Careful attention to the technique of operation, to the limitation of haemorrhage, to careful handling of the gland, etc., have done very much to lessen the dangers of groups 2 and 3; so that the risks arising therefrom are in no way specially applicable to operations of exophthalmic goitre. In the first group the dangers are twofold. If the hyperthyroidism has been present for a long period, secondary changes will have taken place in the heart and kidneys, and the patient will stand any operative measures badly. In the future it is probable that risks of this nature will be almost negligible, for the condition will not be allowed to progress too far before operation is undertaken. At present, however, but little can be done to reduce the mortality. The secondary conditions can be readily recognized, but the operation must be undertaken in spite of them, with a full knowledge of its danger, in order to give the patient her one chance. It is the inclusion of so many such cases that, in my own series of 140, has maintained the mortality at about 5 per cent. In fact, at the present time the reduction of the mortality much below this figure would, in my own hospital practice, made up as it is so largely of ignorant patients, lead to the suspicion that advanced cases were being unjustifiably refused the benefits of operation.

The second danger in this group is the presence of hyperthyroidism. If a patient dies unexpectedly after operation there are nearly always presented symptoms of profound post-operative hyperthyroidism, and hence it is to this danger that attention must in the main be directed. The importance of not operating in the first six months of the disease, when the symptoms can be most easily controlled and often, indeed, cured by medical treatment, I have previously laid stress upon. The fact that every case must be carefully watched in a nursing home or hospital until the hyperthyroidism is at its lowest ebb, the importance of the basal metabolic rate as an indication of the extent of the hyperthyroidism, and the value of medicinal measures in reducing the hyperthyroidism before operation, have been noted by many operators. In fact, more has been done by attention to such details to lower the mortality than by any other step. All surgeons have appreciated the fact that chloroform in such patients is a deadly poison and must be avoided. Some surgeons, indeed, advocate that all general anaesthetics should be abandoned, but here there is not so much unanimity of opinion, for many, and among them myself, have felt that the nervous upset of the patients which is produced when they are conscious at the time of the operation will more than balance the benefit gained by omitting a general anaesthetic. My own custom is to obtain unconsciousness by a minimal dose of rectal ether, and to continue the anaesthesia by means of ether administered on an open mask. Even with every care in the use of such methods, and in the administration of large doses of fluid before and after operation, it will be found that there is a post-operative reaction. In the more satisfactory cases this is slight, but in others the temperature may reach 103° for two or three days, and the pulse may rise to 160. The patient will sweat excessively, will suffer from dyspnoea, and will show a very considerable restlessness which is only controlled with difficulty by morphine. I have previously directed attention to the fact that two distinct groups of cases may be recognized, although there is every gradation between the two. The one occurs in young females who have a large soft, smooth thyroid, marked exophthalmos,

and a rapid pulse, and sweat freely. Such cases I have described as the "vascular group," and as a rule they show only a moderate reaction and rapid improvement after operation. The second group I have designated the "nervous type." Here the patient is more commonly between the ages of 40 and 45; the thyroid is smaller and more nodular, the pulse is less rapid, though often more irregular, and the nervous symptoms are much more prominent. These patients show considerably more reaction and make a slow post-operative recovery. Even when these two groups have been recognized and separated, a careful study of the immediate post-operative results will show a very considerable variation in the reaction, and it is to one cause of this variation that I wish to direct attention in this communication.

It has long been realized that the thyroid secretion has a very marked effect on the heat regulation. All cases of myxoedema feel the cold very severely, while those of hyperthyroidism are in a like degree affected by the heat, so that they are much more comfortable during the cold weather. In my own cases the post-operative distress in hot weather has been much accentuated, and special precautions, such as the use of electric fans, of ice, and of cold sponging, have long been used. In spite of all such precautions it has been my steadily increasing opinion that the mortality during the hot periods has been abnormally high. A careful analysis of my cases from this point of view shows very clearly that such is the case. In my own series there have been two deaths, occurring respectively in the months of January and December. Both of these were in patients with advanced degrees of the disease and were dependent upon secondary cardiac changes. All the others occurred during the hot months of June, July, and August, and all were what may be described as unexpected deaths in that they occurred in patients who by no means showed a pre-operative hyperthyroidism in excess of the others and in whom all the usual precautions had been taken. They also all showed extreme post-operative reaction passing on to acute hyperthyroidism and death. In the accompanying chart I have plotted out the percentage mortality among the total cases operated upon in the individual months of the year, and it is seen that whereas in February, March, April, May, September, October, and November there is no mortality, in the three months of June, July, and August it is in the region of 20 per cent. The effect upon the curve in January and December of the two deaths mentioned above is also shown.

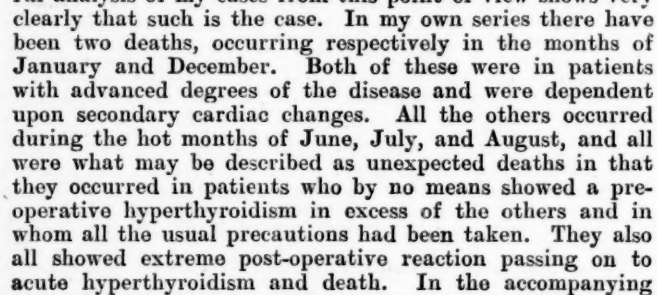

Chart showing the percentage mortality among cases of exophthalmic goitre operated upon in the individual months of the year.

These figures have been collected over a period of ten years, and hence are of considerable value, for it is unlikely that any accidental factor should give so marked an alteration in the mortality which occurs for these three months. Moreover, a mortality of 20 per cent. which is present when the cases operated upon in June, July, and August are considered alone, is one that is much too high and must in fact be considered as an unjustifiable risk. These figures have made it manifest to me—and I publish them in the hope that they will warn others—that no operation on a case of exophthalmic goitre should be undertaken in extremely hot weather, for under such conditions the risk in spite of all precautions is too great and can be easily countered by awaiting more suitable conditions. Fortunately from this aspect the English climate is so variable that seldom would it be necessary to postpone operation for more than two or three weeks.

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INTRAVENOUS INJECTIONS OF PEPTONE AS AN AID TO VACCINE TREATMENT.*

(Abridged.)

BY

H. WARREN CROWE, M.D., B.CH.OXON.,

HARROGATE.

DURING the last eighteen months I have used intravenous injections of peptone in some seventy odd cases of patients who were very sensitive to vaccines, with satisfactory results. Patients to whom one could not give 100,000 streptococci or the same number of *M. deformans* without producing a reaction and general malaise, after peptone treatment were able to tolerate much larger doses.

For a good many years now Dr. Auld has given intravenous injections of peptone in cases of asthma, and claims a fair proportion of successful cases. It is fairly well established that most cases of asthma are due to an extreme sensibility on the part of certain cells of the body to a foreign protein. The slightest trace of this specific protein produces an attack of asthma. The disease, then, depends on a toxic idiopathy, and is strictly comparable with hay fever, urticaria, angio-neurotic oedema, and possibly a large variety of other diseases.

Apparently the poison may be air-borne and conveyed directly to the cells, as we suppose it to be in hay fever; or it may be derived from the blood stream, as is the case when food or certain intestinal bacteria excite the attack. There are a great many different proteins which are poisonous in this way. Susceptible individuals may be affected by several of them widely differing in source (Freeman,[1] Chandler Walker[2]). Dr. Auld[3] first brought forward peptone as a general non-specific immunizing substance, but its action in combating the cell sensibility is extremely obscure. There is no doubt that in some cases the effect is dramatic.

In Dr. Auld's present view, peptone acts by immunizing the system against any protein whatever, although itself incapable of acting as an antigen or producing any antibody, as he himself has shown by experiment. I cannot altogether subscribe to this view, because if peptone cannot function as an antigen, it does not seem to me possible that it should act as an immunizing agent.

It seemed a hopeful procedure to try the injection of peptone in other states of sensitiveness as well as in asthma. In my own experience the treatment of conditions like rheumatism, arthritis, and neuritis by streptococcal vaccine and *M. deformans* vaccine has frequently been rendered extremely difficult owing to sensitiveness—that is to say, that however small the dose given the patient gets a reaction and feels ill. Many cases have failed to benefit, or have obtained benefit only after very prolonged treatment with infinite patience and minute doses.

It is difficult to say why this condition of sensitiveness should arise; it may be that my method of giving frequent small doses excites sensitiveness, as some hold occurs in tuberculosis. On the other hand, patients are sometimes sensitive to the first dose. In a recent case half a million

*Read before the Leeds Medico-Chirurgical Society.

stock streptococcus vaccine as an initial dose in a very chronic case of arthritis was followed by an acute flare-up of nearly every joint, lasting a week. In another case a similar initial dose of half a million *M. deformans* was followed by extreme suffering and four days' confinement to bed. Whatever the cause, hypersensibility to vaccine is an extremely troublesome and annoying complication of vaccine therapeutics. Dr. Pratt Johnson[5] regards sensitiveness to vaccine as an anaphylactic phenomenon comparable with toxic idiopathy, and treats his cases by repeated small doses until this sensitiveness is overcome. He expects no real improvement until he can give large immunizing doses. I must, however, join issue with him in regard to his conception of a small dose. Ten million streptococci, which Dr. Pratt Johnson suggests as an initial dose, is, in my view, dangerously large.

I have tried many methods of getting over this sensitiveness. The first was combining the vaccine with beta eucaine lactate[4]—a method quite successful in a proportion of cases. Sensitized vaccine I have used, and also detoxicated vaccine, but neither of these have I found satisfactory. Since using intravenous peptone I have had no further difficulty, except when the patient did not tolerate the drug. The following are given as some outstanding examples.

CASE I.

A male, aged 61, had a history of having had osteo-arthritis in the left hip-joint for twelve years, and in the right hip-joint for two years. He had acute pain on walking, but not much in bed. There was a large bony outgrowth over the left hip-joint and very considerable changes in the right hip-joint. Little movement was possible. This patient had very bad teeth and also a heavy infection of streptococci (four different varieties) in the faeces.

On December 27th, 1921, a dose of 500,000 of his dental vaccine was followed by a severe reaction lasting three days. He was extremely stiff, the pain was increased, and the weight dropped 2 lb. On December 30th injection of 500,000 of his faecal streptococci was followed by an attack of lumbago. On January 3rd, 1922, the dose was reduced to a tenth of a million and no reaction followed, but on the 7th of the same month a tenth of a million of his faecal streptococci was followed by a slight reaction.

From January 10th vaccines (dental and faecal streptococci combined with eucaine) were administered by his own doctor. The dose was always one-fifth of a million, and there was a focal reaction every time, lasting four to five days. Doses were given once a week. The general health improved. I then decided to give him a course of peptone. Simultaneously with this peptone a subcutaneous dose of vaccine of 500,000 streptococci was given twice a week. No reaction followed. The dose was then rapidly pushed up to 20 million without any trace of a reaction.

From December 27th, 1921, to March 19th, 1922, no progress was made whatever, and only very small doses could be tolerated. After the course of peptone which began on April 29th and was carried on until May 18th, doses were rapidly increased until the end of August—that is to say, within three months, 20 million could be tolerated.

Summary.

Osteo-arthritis of hip-joints. For three months reactions followed every dose of 200,000 streptococci. After peptone the patient was soon able to take 20 million without reaction.

CASE II.

Male, aged 47; a case of true rheumatoid arthritis involving the right wrist; twelve months' history. *X* rays showed nothing abnormal beyond some loss of calcium, but there was a very enlarged swollen joint, cyanotic in appearance, extremely painful, with gnawing and aching pains at night. The wrist was very tender and there was practically complete limitation of movement. Teeth had been extracted in the hope that this would cure the condition, but without result.

On January 13th, 1921, 500,000 *M. deformans* was given; this was followed by some pain in the left wrist. On January 21st he received a million *M. deformans;* there was some reaction the same night and the joint was worse for two days. Then an injection of a million *M. deformans* combined with eucaine was given; no reaction followed. On relapse three days later, 2 million combined with eucaine were injected; this was followed by reaction and swelling. The dose was then dropped on January 29th to half a million with eucaine. Again no reaction took place, but from this time onward to July 11th the dose had to be continually reduced owing to constant reactions, until extremely minute doses were given with eucaine. Even 20,000 *M. deformans* were frequently followed by a focal disturbance. On July 11th I decided to try detoxicated vaccine. It was specially prepared for me by the Genatosan Company. Fifty million *M. deformans* and, later, 100 million were not followed by a reaction; 200 million produced a reaction—exactly the same result as with ordinary vaccine, the only difference being in the nominal amount of the dose. Up to this time the urine had been sterile, but on July 15th I found a streptococcus in considerable numbers. A vaccine was made, and until the end of November small doses were continued, the patient being just as sensitive to the streptococcus as he was to *M. deformans*—that is, 20,000 streptococci produced a reaction, but the reaction of the streptococcus took a different form inasmuch as the areas surrounding the knee and hip-joints were affected, whereas when *M. deformans* excited reaction the wrist and feet always suffered.

On December 22nd a course of peptone was started. The vaccine doses when this was completed were very rapidly carried up to 5 million streptococci and 10 million *M. deformans*. It was after the course of peptone that real improvement started, and the patient rapidly progressed to complete cure. In this case occasionally a certain degree of sensitiveness supervened. One or two odd doses of peptone were then administered.

Summary.

A rare case of monarticular rheumatoid arthritis. For nearly twelve months minute doses caused reaction—for example, 20,000 germs. After peptone, doses were rapidly raised to 5 million streptococci and 10 million *M. deformans* without reaction, and the result was most satisfactory.

CASE III.

A female, aged 50, nine years ago had rheumatic pains in the left shoulder which moved about and were improved by massage. There was slight stiffness in the jaw and neck and some creaking. The wrists were swollen and fluid was present. The metatarsophalangeal joints in both feet were greatly enlarged. To my mind the condition was a typical streptococcal arthritis. *X* rays showed the teeth to be clear of any apical infection. The patient had been an extreme sufferer from hay fever for several years, and was also very sensitive to margarine and vinegar. Marked urticaria would appear after aspirin, presumably excited by the acetic acid radical. The mother, sister, and brother suffered from asthma, and one sister had had rheumatoid arthritis with extreme crippling for many years. This case is a particularly interesting one as demonstrating the frequent association between arthritic conditions and toxic idiopathy—500 units of pollen vaccine on the skin produced a large wheal. In my experience it is the disease known as rheumatoid arthritis which is more frequently associated with conditions of sensitiveness, but in this case there was no symptom of that disease, except the slight creaking of the neck. The faeces were very heavily infected with a good many varieties of streptococci.

Treatment was commenced on April 13th, 1921. Alternating pollen and streptococcus vaccines were given to begin with, and then *M. deformans* vaccine was added in small doses of half a million. This was given on account of the suspicion that rheumatoid arthritis might develop. There was never any reaction, and the condition improved and cleared up apparently completely in the course of about three months. The doses were gradually increased from half a million to 10 million of combined *M. deformans* and streptococci. The pollen units were on an average 250. During the hay fever season itself they were dropped to 100. No hay fever developed.

The following spring the patient had a severe attack of tonsillitis. After that some symptoms of arthritis began to develop again, and she came under my charge once more in April, 1922. I treated her with pollen to prevent hay fever if I could, and found the skin less sensitive than it was before. The neck symptom was now very marked, and there were quite definite signs of commencing rheumatoid arthritis—pain and tenderness in the feet and weakness of the small muscles of the hands. I started to give vaccines of faecal streptococci, both from the old vaccines and from a new specimen, and combined them with *M. deformans*. The result, however, was not satisfactory, and although there were no definite reactions the patient felt ill. The hands grew more painful and weaker, and the feet were also tender. A little massage was given, but that made the condition worse. Under-water massage also had to be omitted for the same reason. I tried all sorts of doses, large and small, but the patient got steadily worse. I then came to the conclusion that possibly there were really reactions all the time, and that it was an atypical form of sensibility with which I had to deal. Consequently peptone was given—on June 1st 0.2 c.cm. of a 2 per cent. solution, on June 3rd 0.4 c.cm., and on June 4th 0.8 c.cm.—together with 1 million streptococci; following this dose there was a very decided reaction and a drop in weight of 2 lb. lasting three days. On June 7th 1.4 c.cm. of a 2 per cent. solution was given with a million *M. deformans*. This was followed by a quite severe reaction lasting three to four days. On June 11th I repeated the dose of peptone with half a million streptococci; there was no reaction. On June 14th 1.4 c.cm. of a 2 per cent. solution and 100,000 *M. deformans* were given; again there was no reaction. On June 18th a million streptococci and half a million *M. deformans* were injected, and no reaction followed.

Now comes the interesting part of the case. The doses were carried on by Dr. Healey of Preston up to approximately two and a half million streptococci and a million and a quarter *M. deformans*. There was no reaction at all, but the patient still was getting no better. This time it was perfectly clear that there was no reaction, and I thought it worth while to push the dose, inasmuch as it seemed that the patient might have been desensitized completely by the peptone. On August 10th 4 million streptococci were given and 2 million *M. deformans;* on August 17th 6 million streptococci and 3 million *M. deformans;* then 15 million streptococci and seven and a half million *M. deformans*. No reaction followed any of these injections. I therefore sent three further doses—20 million and 10 million each. It was at this point that improvement began to set in.

Summary.

A successfully treated patient relapsed after an attack of tonsillitis. Treatment was very difficult owing partly to toxic idiopathy and partly to sensitiveness to vaccine. Peptone injections marked the turning point of the disease.

It is quite clear in this case that the patient was desensitized, and so able to take larger doses, but that there was no improvement until after very considerable doses had been taken. Before the course of peptone it is probable

that the immunity mechanism was in a state of continuous irritability. Perhaps this may be the condition quite frequently when patients do not improve under vaccine treatment, and yet suffer no obvious reaction. So greatly was I impressed with the value of peptone injections, that it seemed possible that here might be a solution of the problem one often has to deal with—namely, that of the patient who can only come for three weeks' or a month's treatment, and then has to return to her own doctor to have her vaccines, and who for financial reasons will certainly not be able to return if the treatment does not succeed. The following case illustrates this. I started straight away with peptone injections, so as to prevent the development of sensitiveness. After returning home the patient's own doctor was able to carry on the treatment without difficulty.

CASE IV.

On June 28th, 1922, I saw in consultation a case of general and severe arthritis, chiefly affecting the knee-joint, in a woman aged 48. She had not been out of bed for four months and was quite unable to walk, but happily there were no contractures. The knee-joints were at the time the worst parts, but practically every joint with the exception of the spine was affected.

Owing to financial and other reasons, it was impossible for the patient to come under my care except for a very short time. However, with only eight days to work upon, I started at once, on July 1st, with 0.1 c.cm. of a 2 per cent. solution of peptone. On July 3rd 0.2 c.cm. was given, on July 4th 0.4 c.cm., on July 5th 0.8 c.cm., on July 6th 1.4 c.cm., and on July 7th 1.4 c.cm., which I combined with half a million *M. deformans*. At the same time I had a bad tooth removed and cultured, and examined the faeces. There were nine varieties of streptococci at the apex of the tooth, and six varieties in the faeces. These were combined in one vaccine, and her doctor carried on with small doses, beginning with half a million combined streptococci and *M. deformans*. On September 29th much stronger doses were required. There have never been any severe reactions and the patient is improving.

Method of Preparing Peptone.

Normal saline prepared from distilled water *plus* 1 per cent. carbolic acid is autoclaved in a flask at 120° C. for twenty minutes with a funnel fitted with rubber tubing and a clip. Vaccine bottles and caps are also sterilized. Ten per cent. of Armour's peptone is added to the hot carbolized saline and shaken up. The vaccine bottles are filled with the aid of the sterile funnel, capped and wired. After forty-eight hours a sample is removed and tested for sterility. When proved sterile, 1 and 2 per cent. solutions are put up in vaccine bottles already fitted with the requisite amount of 0.5 per cent. carbolized saline.

Method of Dosage.

I have tried a good many different series of peptone doses, and find that for all intents and purposes the following method results in a fairly complete and satisfactory desensitization.

On the first day 0.1 c.cm. of a 1 per cent. dilution of peptone; on the second day 0.2 c.cm. of a 2 per cent. dilution; on the third day 0.4 c.cm. of a 2 per cent. dilution; on the fifth day 0.8 c.cm. of a 2 per cent. dilution; and on the seventh day 1.4 c.cm. of a 2 per cent. dilution; and thereafter, at three- or four-day intervals, 1.8 c.cm. two or three times. Having arrived at 1.4 c.cm., a subcutaneous dose of vaccine can be given at the same time, and this dose may be rather larger than the one the patient was sensitive to before treatment. No reaction will occur.

Indications for Peptone Treatment as an aid to Vaccine Therapy.

From what has gone before, it will be clear that as soon as it is definitely determined that a patient is excessively sensitive to vaccines a course of peptone should be started without waste of further time; and secondly, if the patient is likely to be sensitive (and only experience, of course, can tell us when that will be) and can only give a very short time to special treatment, it is advisable to give a course of peptone before the vaccines are started.

Contraindications.

Provided the proper form of peptone is used (Armour's No. 2 peptone, as recommended by Dr. Auld), there are very few contraindications to the use of the drug intravenously.

A few people seem to be unable to tolerate it, and after as small a dose as 0.4 c.cm. of a 2 per cent. solution complain of nausea and occasionally cardiac distress at night. In cases like this I have not pursued the treatment.

I should not give peptone to cases of grave anaemia or other serious constitutional diseases. The most important contraindication seems to be the presence of albumin in the urine, and especially any history of chronic or acute nephritis. In three cases I have seen recrudescence of nephritis which I think might be ascribed to the injections of peptone. On ceasing treatment, however, the symptoms have disappeared.

Summary.

A good many cases of infections by streptococci and *M. deformans*, particularly in the arthritic group, become so sensitive to vaccines that treatment is very difficult and tedious. It is in these cases that intravenous peptone will do away with the sensitive condition, and enable treatment to be renewed.

Peptone provides the best method of overcoming the difficulty of sensitiveness in vaccine treatment.

In cases where sensitiveness is likely to occur peptone can be given as an initial course before vaccines are started.

The contraindications to the treatment are personal intolerance, grave anaemia, severe illness, and chronic nephritis.

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CARBON TETRACHLORIDE AND OIL OF CHENOPODIUM IN HELMINTHIASIS.

BY

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AN article appeared in the BRITISH MEDICAL JOURNAL of July 1st, 1922, reporting favourably on the use of carbon tetrachloride for hookworm infection. The drug also expelled *Oxyuris vermicularis* in large numbers and some *Trichuris trichiura* and *Ascaris lumbricoides*. The drug acts as a moderate purge and it is not necessary to prepare the patients as for thymol treatment. Oil of chenopodium is soluble in carbon tetrachloride, and a mixture of the two was suggested for ascaris infection. Since then several other articles have appeared on the subject.

Treatment with the drug was commenced in the General Hospital, Kuching, in August, 1922, and the immediate results warranted its continuance. It has been given to 82 patients in the hospital. It has been given also to several school children and to one European; the results from the former have been very good, but they have not yet been tabulated as it is hoped to examine the faeces of all the school children in the near future, and to give treatment to those who require it. The European patient showed no ova in his faeces after one dose of ♏ 60, and during the six weeks following he gained 5 lb. in weight.

The faeces of the majority of patients in the General Hospital, including all those who showed any signs of hookworm infection, have been examined in the pathological department. The films have been made direct from the faeces; three slides have been examined before the specimen has been considered to be free from ova, and, wherever possible, two such examinations have been made before the patient has been pronounced free from worms. Of course it is realized that such methods are not absolute—a fact which in a few cases has been demonstrated by *post-mortem* examination.

It has been found that carbon tetrachloride alone is a fairly efficient anthelmintic for ascaris, but in combination with oil of chenopodium it has a much higher efficiency and practically never fails. This combination is believed

to be somewhat more effective than carbon tetrachloride alone for a pure hookworm infection also. Doses up to 1 drachm of carbon tetrachloride alone are being given to adults. Formerly ♏ 80 were frequently given, but cases that were resistant to 1 drachm were usually found to be equally resistant to the larger dose. The dose is given first thing in the morning before eating, and no purge is given.

After trying various combinations the following standard treatment is given to adults: one ounce of castor oil is given at night, and the next morning a mixture containing 1 drachm of carbon tetrachloride, 1 c.cm. of oil of chenopodium, and 1/2 oz. of liquid paraffin. As a rule the faeces are examined again a week to ten days after treatment, and if necessary the treatment is repeated. The immediate effect on the patients does not seem to be any more marked when this mixture is used than when the carbon tetrachloride is given alone. Almost all the patients complain of feeling drunk for a time varying from a few minutes to a day. As a rule three or four motions are produced in the twenty-four hours following the treatment, and these often contain numerous worms (ascaris). Occasionally slight vomiting, headache, or pain in the abdomen occur.

The treatment has been given to Chinese, Dyaks, Tamils, and one Japanese, and the series of 84 cases contains one European and one Chinese schoolboy who were not in the General Hospital. Almost all the Dyaks examined have been found to harbour ascaris, and a large percentage hookworms also. In spite of this fact, almost all the very heavily infected cases, exhibiting extreme anaemia, oedema, and debility, occur in Chinese, and no death from ankylostomiasis can be recollected among the Dyaks at the General Hospital. The Chinese also appear to be somewhat more resistant to treatment. The results as regards actual clinical improvement among the heavily infected Chinese have been somewhat disappointing. In several the stools have been reported free from ova after treatment, and the patient has left the hospital without oedema and feeling much stronger, though probably with still a high degree of anaemia; only to return shortly afterwards with oedema again, though the faeces still show no ova. In many cases a weekly haemoglobin test by the Tallqvist method was made, but few showed a rapid or extensive rise. Many cases of this nature were heavy opium smokers. All cases were given mistura ferri arsenicalis, and many showed an immediate, rapid, and apparently permanent improvement, in contrast to the type of case mentioned above.

The drug appears to have no effect against *Trichocephalus dispar* and *Strongyloides stercoralis*, and specimens containing ova or embryos of these worms only, have been counted as negative. The drug has been given to patients with fever from various causes and has also been given in conjunction with courses of novarsenobillon and emetine injections, without ill results. In a few cases a full dose has been given on two alternate mornings. This caused no ill effects but did not apparently increase the anthelmintic power of the drug. The majority of the hookworms were of the species Necator.

In 35 out of the 84 patients treated two negative examinations of the faeces were obtained after treatment, and in 17 one only. In 26 instances the patients received several treatments, but still showed ova in the faeces or left the hospital before treatment was completed.* Six patients died; they were as follows:

Case 1.—A Chinese, aged 54, was admitted on March 14th, 1922, with a heavy hookworm infection. He received in all 8 c.cm. of oil of chenopodium and 140 grains of thymol. Ova of hookworms were still reported very numerous. On September 1st he received ♏ 60 of carbon tetrachloride; on September 8th ova of hookworms and ascaris were reported as scanty. On September 15th he died. The necropsy revealed oedema of lungs and purulent bronchitis with numerous hookworms and trichocephalus in the intestines.

Case 2.—A Chinese, aged 38, was admitted on August 14th, 1922, with a heavy hookworm infection and a mild ascaris infection. He had marked ascites and cirrhosis of the liver. The abdomen was tapped ten times. He received three doses ♏ 60 of carbon tetrachloride, after which scanty ova of hookworms and embryos of *Strongyloides stercoralis* were reported. On November 20th he died. The necropsy revealed typical cirrhosis of the liver of the alcoholic type and a few hookworms in the small intestine.

Case 3.—A Chinese woman, aged 26, was admitted on October 16th, 1922, with a heavy infection of hookworms and amoebic dysentery. The haemoglobin index by the Tallqvist method was 30 per cent., and later fell to 10 per cent. The dysentery cleared up under emetine, and she received three doses ♏ 60 of carbon tetrachloride, after which on one occasion no ova were found in the faeces. She was intolerant of any form of control and frequently left the hospital and returned. On February 1st, 1923, she died with diarrhoea and ascites. At the *post-mortem* examination about twenty hookworms were found in the small intestine.

Case 4.—A Tamil, aged 38, admitted November 13th, 1922. He harboured ankylostomes, ascaris, and *Trichocephalus dispar*. He received 1/2 c.cm. of oil of chenopodium with ♏ 60 of carbon tetrachloride. He then left the hospital, but returned on December 25th, his faeces showing ova of *Trichocephalus dispar* and hookworms, both very scanty. On January 29th, 1923, he died. The necropsy showed pyopneumothorax. No worms were found in the intestines.

Case 5.—A Chinese, aged 34, admitted on November 22nd, 1922, with subtertian malaria and an infection of hookworms. The malaria responded to quinine treatment, and on November 29th he received ♏ 80 of carbon tetrachloride. On December 5th he became mentally deranged, and later violent, so that he was removed from the hospital. On February 19th, 1923, he died of amoebic dysentery. The intestines were not examined for worms.

Case 6.—A Chinese, aged 64, admitted on December 7th, 1922, with epithelioma of the external auditory meatus. He also harboured hookworms, ascaris, with which he was heavily infected, and *Trichocephalus dispar*. He was later found to be suffering from quartan malaria and developed amoebic dysentery. He received 1 c.cm. of oil of chenopodium in a mixture with ♏ 45 of carbon tetrachloride; after this no ova were found in his faeces. He died on December 27th. At the necropsy about six hookworms were found in the small intestine and numerous *Trichocephalus dispar* in the large. There were no ascaris. Macroscopically the heart and liver did not appear to be fatty.

I wish to express my indebtedness to Miss E. J. O'Driscoll, under whose supervision all the faeces examinations were carried out, and who made suggestions as to dosage. I also wish to thank Mr. W. E. le Gros Clark, Principal Medical Officer of Sarawak, for permission to publish the cases.

*The clinical reports of these cases have been omitted owing to pressure on space.

AN EXTREME CASE OF DIFFUSE SYPHILITIC FIBROSIS OF THE LUNGS.

BY

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IN the work on *Fibroid Diseases of the Lung*, by Sir Andrew Clark, Dr. W. J. Hadley, and Dr. Arnold Chaplin (London, 1894, p. 84), it is stated that "syphilis is undoubtedly, etiologically, concerned in fibroid disease; but it is with extreme rarity that cases capable of being ascribed to this cause are to be met with." It is further stated that most syphilitic cases take "the form of patches of gummatous material with induration around them. In some few cases a diffused form is met with, much resembling pure fibroid disease."

It is of this diffused form that the following case is a most remarkable example.

The patient, a man aged 53 years, was admitted to the German Hospital on March 28th, 1923, under the care of my colleague, Dr. E. Schwarz. I saw him later during the temporary absence of Dr. Schwarz, by whose kindness I am permitted to publish the case. On admission the patient was thin and emaciated-looking, with dyspnoea and an extreme degree of "clubbed fingers." There was no fever. The history was that he had had a chancre twenty years ago, and that his wife had had three or four miscarriages. He had had influenza in 1918, but had otherwise enjoyed fairly good health until about six months ago, when he commenced to suffer from shortness of breath. His wife thought he had been ill for a somewhat longer time. In the hospital, besides the dyspnoea and clubbed fingers, the chief sign was extreme dullness to percussion over the upper parts of both lungs, especially in the supraclavicular regions, and at the back, from the apices down to the middle of the scapulae, with breath sounds of vesiculo-bronchial type. At one part of the left back slight cavernous breathing was heard; over the bases there were some pleuritic sounds. The cardiac dullness was increased to left and right, and there was an accentuated pulmonary second sound. There was apparently no enlargement of the spleen or liver. The urine was free from albumin and sugar.

At first the case appeared to be one of chronic pulmonary fibrosis of tuberculous origin, with dilatation and hypertrophy of the right

side of the heart, and with clubbed fingers connected with the chronic obstruction in the pulmonary circulation. Roentgen-ray examination of the lungs likewise suggested the changes met with in cases of diffuse chronic pulmonary tuberculosis. But the absence of crepitation and all signs of active pulmonary tuberculosis was remarkable. There was very little expectoration and in the scanty mucous sputum obtainable no tubercle bacilli could be found. The Pirquet cuti-reaction for tuberculosis was weakly positive, as it is in most adults. On the other hand the patient's blood serum (April 5th) gave a strongly positive Wassermann reaction. During a prolonged attack of the "cardiac dyspnoea" type the patient died on April 6th. From April 3rd there had been occasional slight fever.

The necropsy (Dr. Lang and Dr. Welsch) showed diffuse fibrosis of both lungs, especially of the upper lobes, so that little pieces cut from the upper lobes sank in water. In the middle portions of the lungs the fibrosis was not so extreme as in the upper lobes, and pieces did not sink in water. Over the lower lobes there was old pleurisy. The cavernous breathing heard (as above mentioned) over the left back during life was obviously due to solid fibrosed lung over a bronchus. The heart was hypertrophied, especially on the right side, doubtless owing to the obstruction in the pulmonary circulation. The wall of the right ventricle was relatively so thick as almost to resemble that of a left ventricle. There was an old calcareous patch in the arch of the aorta, and the left coronary artery was considerably calcified. Elsewhere in the body there was nothing special to note, excepting what suggested a small infarct under the capsule of the liver; it might have been of local syphilitic origin. A careful search was made for old tuberculous lesions, but no caseous or calcareous foci were found in either lung and there was nothing in the lymphatic glands to suggest old tuberculosis.

A microscopic section from the upper lobe of the left lung shows extreme fibrosis, with irregularly distributed lymphocytic infiltration, but no characteristic tuberculous feature. Professor S. G. Shattock, who kindly examined it, writes: "I should think that the fibrosis is syphilitic, because of the positive Wassermann reaction, and because of the diffuseness of the change and the lymphocytic infiltration of the fibrous tissue and comparatively unaffected state of the alveolar epithelium."

Besides Dr. Schwarz, I have to thank the house-physicians, Dr. Lang and Dr. Welsch, for their kind help.

Since reading a paper on acquired syphilis of the lungs at the Medical Section of the Royal Society of Medicine in November, 1916,[1] I have become inclined to think that syphilitic changes in the lungs occur more frequently than is even yet commonly supposed. In patients with old tertiary syphilitic lesions elsewhere it is not very rare by Roentgen-ray examination of the lungs to find appearances suggesting tuberculous changes, though all other signs and symptoms of active tuberculosis are absent, notably in regard to examination of sputum. In some of these cases I think that there are minor degrees of syphilitic fibrosis of the lungs present. I believe, moreover, that in some cases diffuse syphilitic fibrosis of the lungs commences insidiously, and runs an insidious and progressive course, the patient being supposed to suffer from ordinary chronic bronchitis and pulmonary emphysema with or without acute exacerbations.

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VOLVULUS OF THE LARGE INTESTINE.

BY

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ACUTE volvulus of the large intestine is one of the rarer and most fatal forms of intestinal obstruction. Out of 199 cases of acute colonic obstruction operated upon at the Manchester Royal Infirmary during the ten years 1913-22 there were only six cases of this nature; of these two died after operation. In the six cases the caecum and the sigmoid colon were each involved on three occasions. By the term "volvulus" is meant the twisting of the bowel upon its mesenteric axis, resulting in obstruction to the passage of the intestinal contents and arrest of the circulation in the involved loop when the torsion exceeds 180 degrees. A rare type of volvulus has also been described where the sigmoid colon is intertwined with a coil of small intestine.

ETIOLOGY.

Torsion can only occur in that part of the large intestine which possesses a mesentery and where its base of attachment is narrow; such conditions are found in the sigmoid loop, which is said to be implicated in about 70 per cent. of cases. Torsion is less often met with at the ileo-caecal region and is possible only when the caecum or ascending colon has some degree of freedom of movement. This unfixed condition may be of congenital or acquired origin. The congenital form is seen when the caecum and ascending colon have a mesenteric attachment to the posterior abdominal wall—a result of failure of obliteration of the foetal mesentery, which normally fuses with the posterior parietal peritoneum in this region and leads to fixation of the gut. Perhaps more often the condition is acquired and is found associated with a long history of constipation, where the bowel is more or less constantly distended, and the retained contents drag upon and elongate the mesentery, thus bringing the ends of the loop close together, as may not unfrequently be seen in the sigmoid colon. In Hirschsprung's disease (idiopathic dilatation of the colon), a condition which is characterized by lengthening and dilatation of the colon, and in which the most marked clinical features are constipation and meteorism, all the conditions favourable to the occurrence of volvulus are found. This disease, though more commonly seen in children than adults, is not so rare as is generally supposed, and it is not unlikely that it may be an important predisposing factor in the etiology of volvulus, when the disease pursues a chronic course. Cases of so-called megacolon in the adult have been recorded from time to time, and these may be examples of Hirschsprung's disease dating from infancy which have reached mature age, or the dilatation of the colon may only commence when adult life is reached. The anatomical arrangement of the redundant sigmoid invites kinks and twists, and it is not difficult to see how such cases may result in a volvulus.

One of the predisposing causes of torsion is a laxity of the attachments of the colon. In children, however, torsion is a rare occurrence, and at this period of life want of fixation of the bowel tends to predispose rather to intussusception. In elderly persons, on the other hand, intussusception is seldom met with, and with advancing age the liability of the bowel to become twisted appears to be greater.

The sex incidence is remarkable in relation to these affections of the colon; all of them occur more frequently in males—intussusception 70 per cent., volvulus 80 per cent., and Hirschsprung's disease 85 per cent.[1] This fact is difficult to explain. It appears not unlikely that the actual onset of volvulus is dependent on some disorder of the neuro-muscular mechanism of the bowel. Keith[2] has demonstrated the presence of special neuro-muscular junctions, situated at certain points in the intestine, which he considers control its movements. It may be that, owing to some abnormal cause of irritation, this specialized tissue is thrown into a state of spasm and a temporary obstruction is set up. Acute distension of the bowel is thereby produced and a kink or twist may follow, when the bowel is freely mobile, as the result of irregular peristaltic action.

SYMPTOMS.

The onset of the condition is generally acute, as both obstruction and strangulation will be produced. The sudden onset in a patient usually over 40 years of age, with abdominal pain, absolute constipation, and meteorism, is the combination which should suggest a volvulus. Abdominal distension is the most marked clinical feature of the condition, and in no other variety of intestinal obstruction is the distension produced so rapidly and to such a marked degree.

A tumour may sometimes be palpated, or the outline of the distended loop seen through the abdominal wall. Vomiting is not as a rule marked, as the obstruction is situated low down. Collapse appears later, and, where operation is delayed, death usually follows within a week.

MORTALITY.

The prognosis depends on the time when operation is carried out, and recent figures show a marked improvement with earlier diagnosis and more prompt surgical intervention. Barnard[3] records a mortality of 93 per cent. out of

27 cases in thirteen years at the London Hospital. In a series of 9 cases at the Massachusetts General Hospital from 1893 to 1907 the mortality was 100 per cent. Richardson[4] records 16 cases (8 affecting the large intestine) operated on at the same hospital between 1908 and 1917, with a mortality of only 25 per cent.

TREATMENT.

The treatment is necessarily surgical. On opening the abdomen the volvulus presents as an enormously distended coil of gut, which appears almost to fill the abdominal cavity. The loop is delivered through the incision, and if healthy is untwisted, and a Paul's tube is then fixed in the summit and brought out through an abdominal incision. This allows the contents of the intestine to be evacuated and the easy reposition of the bowel. Further, the fixation of the bowel to the anterior abdominal wall by the Paul's tube prevents a recurrence of the twist, a complication otherwise liable to occur. Should the intestine prove to be gangrenous or impossible to untwist, the affected segment is resected and Paul's tubes fixed in the divided ends. Later, if the patient recovers, an anastomosis can be carried out.

The following three cases have come under my care:

CASE I.

The patient, a female aged 63 years, was admitted to the Manchester Royal Infirmary on January 23rd, 1921. She had been seized with abdominal pain three days previously, and the bowels had not been moved in spite of repeated enemata. On examination the abdomen was considerably distended, but no definite tumour could be detected on abdominal or rectal examination. The abdomen was opened by a right paramedian incision, and the sigmoid loop was found very dilated. It was seen to have undergone two complete twists on its mesenteric axis. These were untwisted without difficulty and a Paul's tube tied in the summit and fixed to the abdominal wall. The wound was closed, and the bowels moved subsequently each day. She was discharged from hospital seven weeks later with the colostomy practically closed.

CASE II.

A male, aged 50 years, was admitted to hospital on July 28th, 1920. He had been ill for five days with abdominal pain, constipation, and vomiting. His general condition was poor. The abdomen appeared very distended and a tumour was detected in the right side. Laparotomy showed this to be a greatly ballooned caecum which had a gangrenous patch on its anterior wall. The bowel had undergone one and a half twists. After detorsion a Paul's tube was fixed in the caecum through the gangrenous area and the wound closed. The patient failed to rally after the operation and died the following day.

CASE III.

I was asked, a short time ago, to see a gentleman, aged 67 years, whose illness had commenced with abdominal pain three days previously. He had suffered from chronic constipation, which had now become absolute, for many years. The abdomen appeared considerably distended, and on laparotomy an enormously ballooned sigmoid was found which had undergone rather more than one complete twist, whilst the remainder of the colon appeared both dilated and hypertrophied. The volvulus was untwisted, a Paul's tube tied in the apex, and the abdomen closed. He made satisfactory progress for six weeks, but subsequently succumbed to a sudden attack of heart failure.

It is still a debatable question among surgeons whether, in cases of acute intestinal obstruction, a general exploration of the abdomen should be carried out or a simple caecostomy performed. In sudden obstruction it may be impossible to exclude cases of volvulus, and caecostomy under such conditions would certainly be liable to end in disaster. Though cases of this nature are not common, yet it is under such conditions, where the pre-operative diagnosis may be uncertain, that the blind caecostomy is open to objection.

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AUTOPLASTIC OVARIAN TRANSPLANTATION.

BY

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THE following case is of interest because the patient has been under observation for thirteen years after an operation for transplantation of the ovaries, and because it was possible to make macroscopic and microscopic examinations nine years and seven months after the transplantation was performed. The clinical and histological evidence combine to show that the organs are still in a healthy condition.

On March 5th, 1911, a married woman, aged 17, was admitted for her confinement to the obstetrical department of the Women's Hospital, Melbourne. She had suffered from tuberculous disease of the hip, had gone on crutches since the age of 7, and presented a discharging tuberculous sinus over the right trochanter. Scars of healed sinuses were seen over the lower lumbar vertebrae and right buttock. Caesarean section was performed and a full-time female child, weighing 6 lb., delivered. In order to prevent further conception I transplanted the ovaries into the anterior abdominal wall. Three and a half years later I reported the case, with observations to date, in the *Medical Journal of Australia* of January 16th, 1915, vol. i, No. 3. Since then the patient has been under continual observation; owing to the strenuous use of crutches a ventral hernia developed in the upper part of the scar.

The patient's health has been generally good. During the last five years she has gradually put on weight; her skin is fresh and her eyes are clear; the tuberculous lesions in the bones of the right lower extremity have practically healed, there being a little discharge only occasionally. The menstrual flow occurs every 28 days, with slight variations of two or three days on either side. She cannot remember ever missing a period. The duration is four days. There is no pain whatever in the region of the uterus, but some tenderness usually indicates which ovary is providing the Graafian follicle, it may be each ovary alternately, or either ovary two or three times successively. The pain has not been more than what would be called tenderness at any time, and is usually more marked in the subcutaneous graft than in the one more deeply placed in the rectus sheath. Sometimes slight swelling accompanies the tenderness. The sexual appetite is not decreased.

The right ovary, which was placed on the aponeurosis of the external oblique abdominal muscle, is easily felt; it feels a little larger than normal. The left ovary, more deeply placed in the rectus sheath, is more difficult to feel, but it can be located as a slight thickening, and each of them on pressure produces a sickening sensation. The uterus is normal in size. There is no leucorrhoea. There is no evidence of atrophy. Bartholin's glands are observed to function.

On October 15th, 1920, the patient complained that two days previously, during a fit of coughing, she suddenly felt a severe pain, with some swelling in the hernial sac. An irreducible strangulated hernia was at once diagnosed, and the patient was hurried to the Women's Hospital for immediate operation. After the hernia had been dealt with, and the peritoneal cavity closed, opportunity was taken to examine the graft in the rectus sheath. As its situation was so well known, a few touches with the knife were sufficient to reveal it, snugly contained in the sheath, and firmly adherent to the surrounding tissues. It had been placed in this situation roughly nine years and seven months before (March 5th, 1911). It was about 1¼ inches in length, 1/2 to 3/4 of an inch in breadth, reddish in colour like the tissue around it, firm in consistence. Several Graafian follicles could be felt, varying in size, the largest being about the size of a small pea. Some follicles could be seen, greyish in colour, projecting slightly, and when pricked with a knife exuded liquor folliculi. A small piece was removed for microscopical examination. Sections of the graft showed its histology to be quite consistent with the clinical history of the patient. Perfectly formed Graafian follicles and corpora lutea in normal ovarian stroma can be demonstrated, whilst the abundant arteries, veins, capillaries, and nerves indicate how completely the graft has been adapted by its new environment.

April 28th, 1923: The patient, now in the thirteenth year of observation, is still menstruating regularly, and her sexual life is apparently normal.

This case is interesting, for the following reasons:

(1) The length of time during which the patient has been under careful observation—that is, nine years and seven months. (It is also thought that this is the only case on record where a human ovarian graft has been microscopically examined after being transplanted so long.)

(2) The sexual life of the patient has been quite normal. The grafted ovaries have apparently discharged their functions quite as well as if they had not been grafted. Opinions have been expressed by some[1] that a graft would not continue to function longer than a few months, or perhaps a year or two; but the information obtained from this case clearly shows that

the grafted ovaries may carry on their function for a much longer period.

(3) Except for a little tenderness, and occasionally slight swelling about the time of menstruation, not the slightest inconvenience has been caused by the grafted ovaries in their new location.

The conclusions resulting from the consideration of this case, especially when taken in conjunction with the reports on this subject by other operators,[2] demonstrate beyond all doubt that autoplastic transplantation of the ovaries is a most valuable gynaecological procedure, and is a definite step forward in the conservative surgery of these organs. The simplicity of the operation, the ease and rapidity with which it can be done, the absolute assurance of success, if a few simple facts are observed,[3] justifies its use beyond all doubt in suitable cases.[4]

I am much indebted to Mr. W. J. Owen, of the Australian Institute of Anatomical Research, Melbourne, for preparing the microscopical sections, and for microphotographs.

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A CASE OF PITUITOUS CATARRH.

BY

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CASES of that variety of bronchitis known as "pituitous catarrh," originally described by Laënnec, are exceedingly rare, and for this reason it appears to us of interest to report the following instance. The patient was under the immediate care of one of us (I. J. D.), and on February 9th was seen by us together in consultation.

The patient was a married lady, aged 34; her height was 5 ft. 2½ in., her weight 9 st. Her maternal grandmother had died of bronchitis, but otherwise the family history was unimportant. She was of a cheerful disposition, and had enjoyed fair health, except that since 1919 she had been subject to attacks of bronchitis. These occurred twice in 1919, and once each in 1920 and 1922, and were respectively of six, four, three, and two weeks' duration. In each the sputum was of the peculiar character seen in the present attack (1923), and there can be little doubt that they were also attacks of pituitous catarrh, though the nature of the malady was not recognized at the time.

The present attack commenced with a "cold" at Christmas, 1922. This was followed by bronchial catarrh, with the expectoration of some phlegm of the peculiar character to be shortly described. This lasted for about a week and then improved, but the cough and phlegm did not entirely disappear. In the middle of January, 1923, the bronchial catarrh became worse and she commenced to bring up larger quantities of the peculiar expectoration. There had been hitherto little, if any, pyrexia, and the patient had been getting up, though confined to the house. On February 5th, however, owing to the increasing cough and distress, she took to her bed, where she remained for the following three weeks.

On February 9th, when seen in consultation, her condition was as follows:

She was sitting up in bed, racked by a harassing cough. The lips were faintly cyanosed. Temperature 99.5°; respiration somewhat hurried. She was well nourished; tongue clean; teeth satisfactory; no pyorrhoea. Throat natural.

The chest was a little deeper than natural, but there was no marked emphysema. Heart natural; pulse 90, regular, soft.

Sonoro-sibilant râles were audible all over the lungs, with also some scattered moist sounds. There were no signs pointing to tuberculosis or of consolidation.

The abdomen, nervous system, and urine were natural.

The cough was very troublesome from continual efforts to bring up the sticky expectoration. At intervals of an hour or so a paroxysm would occur, and these attacks, especially at night, were often distressing, a good deal of cough being required to bring up a small quantity of phlegm.

The sputum, which was coughed up as a rule in small amounts at a time, was quite unusual in character, and quickly formed a thick, ropy homogeneous mass in the sputum pot. This was found to consist of mucus, looking just like unboiled white of egg, as described by Laënnec, and was covered on the surface with a white froth. The mass of mucus was lightly streaked with small plugs, whitish or yellowish-white in colour, composed of muco-pus from the smaller bronchi.

The expectoration was expelled in small quantities at a time, varying from a teaspoonful or two to half an ounce. But later, when improvement set in and some sleep was possible, several ounces were expectorated in a short time, and more than once a mug of 6-ounce capacity was filled in a quarter of an hour. A bout of coughing would last until the sticky mucus was expelled, relief finally coming with the expulsion of one of the small plugs of muco-pus to which we have referred. For a period of a fortnight the average daily amount of sputum was 20 ounces, but on several days a greater amount was brought up, 30 ounces being the largest quantity expectorated in twenty-four hours.

A characteristic feature of the sputum was the ease with which it could be emptied from vessel to vessel, the whole flopping out *en masse*, leaving the sputum pot clean, save for a little froth near the rim. Its tenacious character was also well shown by the fact that if a small portion were seized with a pair of forceps, the whole mass could be pulled as a string from one pot to another.

The patient was kept strictly in bed, a steam-kettle was ordered, and poultices and antiphlogistine to the chest. Since the sputum was so sticky and difficult to bring up, belladonna seemed contra-indicated in spite of the amount of expectoration, and a mixture containing sodium bicarbonate, ammonium carbonate, vinum ipecacuanhae, and syrup of squills was prescribed. Under this treatment the symptoms slowly improved, and the cough and phlegm gradually lessened, but it was three weeks before the patient was able to leave her bed, and four weeks longer before she could leave the house. At no time, we may add, did the temperature reach 100°, though ranging at night between 99° and 100°.

The patient's cure was finally completed by a stay of three weeks at Bournemouth, which she left on April 22nd, free from symptoms, and with her chest quite clear.

Dr. H. A. Scholberg, joint pathologist and bacteriologist to the Royal Infirmary, Cardiff, examined the sputum in more detail, and reported that the bulk of the material was, as its appearance indicated, mucus. He also found that a small quantity of albumin (but no globulin) was present, amounting to roughly just under 0.5 per mille, as measured by the Esbach's tube. The tenacious yellowish-white plugs were found under the microscope to consist of mucus and pus cells (with Gram-positive diplococci), clearly coming, in Dr. Scholberg's opinion, from the bronchioles.

Cultivation of the sputum showed the presence of no unusual organisms, but many colonies of streptococci and of *Micrococcus catarrhalis*, with a few staphylococci, were grown. Tubercle bacilli were not found, nor had they been detected at a previous examination.

Commentary.

In his original description of "pituitous catarrh" Laënnec[1] wrote as follows: "I call that variety of catarrh 'pituitous' which is associated with an expectoration which is colourless, transparent, ropy, frothing on the surface, and which when the foam has been removed resembles white of egg diluted with water."

Defined in this way the case which we have described falls into this type of bronchitis, though in this instance there was but little "dilution" of the "white of egg" appearance. It is a variety which is, in our experience, extremely uncommon, and is one in which the stress of the malady would appear to fall upon the mucous glands of the bronchial tract, leading to very excessive secretion of mucus. In this connexion it may be of interest to add that the lady whose case we have recorded, for many years on first waking in the morning had been obliged to remove an accumulation of sticky mucus from the roof of the mouth, thus indicating possibly a perverse activity on the part of her mucous glands.

But few cases of pituitous catarrh are described in the literature, and it would appear to us from the clinical descriptions that in some of those published confusion has arisen between this variety of bronchitis and acute oedema of the lung, the abundant frothy sputum met with in each case having led to the mistake.

A careful investigation of the sputum should, however, at once distinguish them. In acute oedema of the lung, as we have shown elsewhere,[2] when the froth has been removed the expectoration will be seen to be yellow or amber colour; in pituitous catarrh it is like white of egg. In the former there is no mucus in solution, or, if present, it occurs in small and varying quantities, depending on the duration of the attack and the admixture of ordinary muco-purulent sputum; in the latter the secretion is chiefly composed of mucus, and thus is much more viscid. Thirdly, and most important, while the former contains so much protein as to become solid on boiling, whence the name "albuminous expectoration," the latter contains only a

trace of albumin. The diagnosis, therefore, should not be difficult, provided the sputum be carefully examined.

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[2] Albuminous Expectoration following Paracentesis of the Chest, by P. Horton-Smith Hartley. *St. Bartholomew's Hospital Reports*, vol. lxi, 1905, p. 77.

LACERATED KIDNEY DUE TO INDIRECT VIOLENCE.

BY

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THERE are several points of interest in the following case, which will be discussed after the facts have been related.

Mrs. C., aged 53, was first seen on January 1st, 1923. She stated that thirty-six hours previously she had fallen from a chair on which she was standing, and immediately afterwards was seized with abdominal pain. She went to bed, and some time during the night vomiting commenced, and continued up to the time of my seeing her on the morning of the second day after the accident. She then appeared very ill. The pulse was 110 and rather weak, the temperature 100°. There were no signs of external violence. The abdomen was distended and acutely tender in its lower segments, particularly over the right iliac fossa. It exhibited an intense rigidity below the level of the umbilicus; above that level rigidity was not so marked. The liver dullness was not diminished; rectal and vaginal examinations yielded no information. The urine was scanty and high-coloured, but contained no blood. A diagnosis of peritonitis was made, though I was unable to determine its cause.

Operation.

She was removed to hospital, where operation was at once performed. On palpation under the anaesthetic a fixed mass was felt in the right iliac fossa, passing backwards into the right lumbar region and upwards beneath the ribs.

An incision over the right rectus was made, and it was at once seen that there was a considerable quantity of free blood and clot in the abdominal cavity. The mass felt on palpation was found to be a haematoma around the right kidney. This haematoma had tracked downwards along the psoas, had stripped up the peritoneum, and lifted forwards the caecum and ileo-caecal valve; further, it had percolated into the lower part of the mesentery of the small intestine.

To the outer side of the ascending colon there was a small tear in the parietal peritoneum not more than one inch long. Through this blood had evidently made its way into the peritoneal cavity. It was interesting to note that the caecum, appendix, and terminal part of the ileum were deeply ecchymosed, and presented the appearance that they would have shown had they been involved in a recent strangulation. The blood and clots were rapidly cleared out, the rent in the peritoneum sutured, and the abdomen closed.

An incision was now made exposing the right kidney. The haematoma was cleared away, and, on gentle examination of the organ *in situ*, a laceration was felt on the anterior surface of the lower pole extending from the lateral border inwards towards, but not involving, the pelvis. As there was now no bleeding from the laceration its depth was not determined, and I contented myself with packing the cavity resulting from the evacuation of the haematoma and closing the wound as far as practicable around the pack.

After-History: Recovery.

The patient's condition at the end of the operation was grave and continued so for two days, there being much post-operative vomiting. From then on, however, she made good progress. The packing was removed in two or three stages and a drainage tube substituted. Through this urine was discharged in small amount for five weeks. There was never any blood in the urine passed naturally. The patient left hospital at the end of the eighth week.

In the first place, the laceration was caused by indirect violence. In such circumstances the injury to the kidney may arise from acute flexion of the body with corresponding acute flexion of the kidney on its transverse axis (Thomson Walker); or where there is no such flexion but where the accident consists of a fall from a height on to the buttocks, the kidney may be injured by direct impact against the twelfth rib or transverse process of the first lumbar vertebra (Tuffier). In the case under consideration I think the laceration was produced by the first mechanism, for the distance from the seat of an ordinary chair to the ground would hardly be sufficient to cause it by the second method.

Secondly, though lacerations of the kidney usually radiate outwards from the hilum, in this instance the laceration was produced in the cortex only, and, though small, had given rise to much haemorrhage.

Thirdly, there was no haematuria so far as I was able to observe. There may, of course, have been blood in the urine when the patient, who was by no means an intelligent type, was not in a condition to notice it. On the other hand, since the laceration was in the cortex only, there may have been none at any time.

Fourthly, although the laceration was caused by indirect violence the peritoneum was torn and there was accompanying haemoperitoneum.

There is no doubt that haemorrhage had already ceased at the time of operation, but it is highly probable that but for the treatment adopted urine would sooner or later have found its way into the peritoneal cavity, with fatal results.

I employed treatment by packing, rather than suture of the laceration, in order to save valuable time. In this connexion it is interesting to note that Albarran has collected six cases in which packing was resorted to; all recovered (Thomson Walker).

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

LACTIC ACID IN THE TREATMENT OF CHRONIC ENTERITIS.

A NUMBER of cases of chronic enteritis are associated with excessive fermentation of the intestinal content. The condition frequently arises *de novo*, although in a certain proportion of cases it follows an acute stage.

It occurs in babies as a result of the food becoming contaminated by micro-organisms. The motions are frequently loose, green, and malodorous. This is usually associated with abdominal distension, excessive flatus, and attacks of screaming due to colic. There is nothing palpable abdominally. In adults the following syndrome is present:

(1) Colic of either the small or large intestine. The pain is variable in intensity, and usually moves from one part to another. In the small intestine it is usually referred to the region of the umbilicus. The large intestine may be definitely palpable and tender to touch. I have seen one case where the caecum was palpable.

(2) The stools vary in consistency and colour. There may be looseness alternating with normally formed motions or constipation. The stools may be paler than usual, or even greenish. They are frequently offensive, and are likely to be associated with excessive flatus.

(3) There may be an associated gastric dyspepsia. Where the condition has lasted some time mental depression, loss of weight, anaemia, and headache may occur as a result of toxic absorption.

Cases of the types referred to respond very well to lactic acid. The rationale of the treatment lies in the fact that *B. coli*, which is as a rule unusually active in those cases where the motions are unduly offensive, cannot grow in a concentration of lactic acid of more than 1 per cent.[1] The treatment is a result of Metchnikoff's teaching, and given in this way is a satisfactory alternative to curdled milk preparations. The latter cannot always be tolerated by patients,[2] and involves a certain amount of difficulty where there is not the proper convenience for making bacterial preparations.

The following prescription is useful for adults:

℞ Ac. lact. 3ij
Syr. aurant. 3j
Aq. ... ...ad 3viij
Sig.: 3ss t.d.s. p.c.

Where there is gastric dyspepsia the following may be substituted:

℞ Ac. lact. 3ij
Liq. strych. ... ... mxx
Tr. card. co. 3j
Aq. ... ...ad 3viij
Sig.: 3ss t.d.s. p.c.

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[1] *Archives of the Middlesex Hospital*, 1916.

[2] Herschell: BRITISH MEDICAL JOURNAL, 1910, i, p. 21.

Reports of Societies.

TREATMENT OF DYSMENORRHOEA.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on June 7th, with Dr. T. W. EDEN in the chair, Mr. L. G. PHILLIPS read a paper on the treatment of dysmenorrhoea, with an analysis of 100 cases.

Mr. Phillips said that fifty cases were treated with extracts of ductless glands, either alone or in combination with antispasmodics. Only four cases of this group came eventually to operation as they failed to be relieved sufficiently to carry on their work in comparative comfort. When the ductless gland tablets were omitted the painful periods often returned. Forty cases were treated by antispasmodics alone, and of these thirty-four were benefited and the remaining six came to operation. Ten cases were treated between the periods with bromides and salicylates, combined with laxatives and small nightly doses of luminal during the periods; all were relieved.

In treating the cases an attempt was made to interpret all the available information and to evolve a plan of treatment based on the recognition of the following clinical types:

In Type 1 dysmenorrhoea was a disease of faulty hygiene, upbringing, and surroundings. This type was thin, anaemic, constipated and poorly developed, with visceroptosis and faulty posture and breathing; they followed sedentary lives with little exercise and fresh air. The feeble musculature of the uterus was easily exhausted and gave rise to cramp and pain when called upon to make expulsive efforts in the exhausted state. The treatment was directed to the correction of these faults. The correct mental attitude was cultivated by teaching the patient that menstruation was natural and that she must continue to bathe and take exercise as usual. No constricting clothing should be worn and stays must not be permitted to do the work of the abdominal muscles. Constipation was corrected by drinking plenty of water and eating fruit, combined with abdominal kneading night and morning. Exercise such as walking or tennis, and special exercises designed to strengthen the abdominal wall, formed an important part of the treatment.

In Type 2 the dysmenorrhoea was functional. These women complained not only of menstrual pain, but generally of headache, nausea, and constipation as well; they were usually nervous and worried. Ten such cases were treated successfully by sedatives: bromides and salicylates between the periods; one to one and a half grains of luminal nightly during and just before the period; and general hygienic measures.

In Type 3 the symptoms suggested some form of obstruction as the causal factor. The pain resembled ureteral and biliary colic in its intensity and sudden onset, and subsided rapidly when the clot was passed, just as in biliary and ureteral colic the pain ceased when the stone was passed. Gynaecologists still continued to employ cervical splitting operations, such as anterior hysterotomy, for the relief of pain. In three cases of hysterectomy for dysmenorrhoea performed during the period the uterus was found to contain clots. Whether the intrauterine clot was normal and was not dissolved because of endometrial defect, or whether clotting *in utero* was pathological, must be decided before the pain could be treated rationally. It was reasonable to suppose that a uterus with a poorly developed musculature might be unable to expel casts or clots even through a normal os.

Type 4 was a type of patient in whom there existed signs of arrested development of the genital organs. They complained of pain in one or other iliac region alone, or before the central pain. Menorrhagia was as common as scanty flow, because an undeveloped endometrium and musculature were linked up with a normal ovarian stimulus. The obvious treatment was to stimulate development of the uterus, and this was often successful. In addition to the general hygienic treatment organotherapy and electrical treatment were useful.

In ten cases where medical treatment had failed two were cured by curettage and one by anterior hysterotomy. Hysterectomy was performed in two cases where the uterus contained clots and showed marked arterio-sclerosis, and the remainder (very severe cases) were sterilized by radium. One hundred cases treated surgically were followed up and compared with 100 cases treated medically. It was found that 25 per cent. were cured and 50 per cent. were unaffected, while the best results were in cases treated by curettage. These results, however, were inferior to those obtained in the series of 100 cases treated medically. Mr. Phillips believed that most gynaecologists felt that the surgical treatment of dysmenorrhoea without physical signs was disappointing.

In the discussion that followed, the PRESIDENT said that he was particularly impressed by the small number of patients who came to operation; in his experience operation cured 50 per cent. and relieved to some degree 25 per cent. Mr. BONNEY pointed out that the figures of results of treatment of dysmenorrhoea were confused by the variety of causes. If dilatation was limited to cases of the "virginal type" of dysmenorrhoea the operative results would be much better. It was remarkable that very small uteri were so often associated with extreme haemorrhage, for which hysterectomy was required. Retroversion was often a cause of dysmenorrhoea in a virgin, and could be cured by reposition of the uterus. Dr. J. M. BRYDONE said that as a general practitioner he had been called upon to treat many cases of dysmenorrhoea, and found that while patients aged 24 or less could generally be cured, those over that age generally failed to respond to medical measures. There was a large element of suggestion about the treatment, and success was likely to follow care and perseverance. Many of the "masculine type" of women who suffered from dysmenorrhoea played too many games, and got better with rest.

A number of specimens were exhibited by Dr. HERBERT SPENCER, including a sarcomatous ovarian dermoid cyst, a ruptured carcinoma of the ovary, and a microscopical preparation showing the effect on the Fallopian tube of torsion of an ovarian tumour. Dr. RUSSELL ANDREWS described a case of carcinoma of the cervix associated with prolapse of the uterus in a woman aged 77. Mr. VICTOR BONNEY read a short paper on diurnal incontinence of urine in women. In its early stages, he said, this form of incontinence only occurred when women made some effort producing sudden violent abdominal strain, such as coughing or sneezing, but as it grew worse it was provoked by any movement which involved a sudden jerk. Clinical examination showed that the escape of urine was associated with an abnormal descent of the bladder and urethra immediately behind the symphysis pubis.

MUSCULATURE OF THE AORTA AND CARDIAC VALVES.

AT a meeting of the Edinburgh Medico-Chirurgical Society, June 6th, with Dr. WILLIAM STEWART in the chair, Dr. A. BLACKHALL-MORISON read a communication on the musculature of the aorta and of the cardiac valves, anatomically, physiologically, and clinically considered.

Dr. Blackhall-Morison compared the work of the anatomist and of the physiologist, and pointed out the generally insufficient study of the valvular apparatus of the heart. He made special reference to the valuable and largely forgotten work of H. S. Savory, published in 1851 and 1852. With slight modifications, as the result of modern methods of investigation, Savory's observations and teachings were still accepted. The advantages were emphasized of a comparative study of the subject by serial sections, stained by modern methods Dr. Blackhall-Morison then described the anatomy and physiology of the right venous entrances; he regarded the superior vena cava and coronary sinus as para-auricular structures, and the latter as the venous heart of the coronary circulation. He explained the progressive nature and complex function of auricular systole, and maintained that the muscular action of the lower segment of that chamber persisted during ventricular systole. Specializations in local valvular musculature were described, and the grounds given for belief in a local nervous control in the heart. The mechanism of muscular closure of the mitral orifice was described in detail, and what the speaker believed to be a hitherto unnoted series of *rotatores basis aortae* was demonstrated. The difference of the aortic and pulmonary arterial musculature was dealt with, and the relations shown of the

auricular muscle to the aorta and posterior aortic valve, together with conclusions as to the function of these muscle bundles. The general principle of centro-peripheral nervous influence on the heart was discussed, and the myogenic nature of some cardiac irregularities was called in question. Finally, an explanation was suggested of certain clinical conditions and their physical signs.

The paper was illustrated by lantern slides and microscopic sections, and was discussed by Professor RUSSELL and Dr. W. T. RITCHIE.

Extensive Resections of Small Intestine.

Mr. PIRIE WATSON read a communication on extensive resections of the small intestine, illustrated by a case on which he had operated.

This patient, a woman aged 63, was admitted to hospital suffering from acute intestinal obstruction, the result of mesenteric thrombosis; at operation it was necessary to resect seven and a half feet of gangrenous small intestine (ileum). Her former good health was quickly regained, with no nutritional or digestive disturbance; on a mixed diet the faeces and urine remained practically normal.

The term "extensive" was by consent limited arbitrarily to resection exceeding 200 cm. (6 ft. 7 in.); because of individual variation in the length of the bowel this length might equal one-fifth or almost one-half of the whole small intestine. Above the 200 cm. limit metabolic disturbances were common. Mr. Watson then presented an analysis of seventy-three recorded cases, of which sixty-four were "surgical recoveries," the death rate being 12.3 per cent.; this latter figure was, in his opinion, probably too low, because as a rule only successful cases were published. Good "functional recoveries," in which no disturbance of general health or digestion resulted, were obtained in 64 per cent. of cases—a high figure when one considered not only the magnitude of the operation, but also the grave nature of the lesion for which operation was performed. In a survey of the recorded cases it was found that age was apparently an unimportant factor, equally good results having followed operation on patients at both extremes of life; this was in contrast to Flint's animal experiments, which showed that operation was better borne by the fully developed than by young growing animals. The morbid conditions necessitating extensive resections were mentioned. As regards methods of operating, the majority of cases had been treated by an end-to-end anastomosis, but recently lateral anastomosis was being preferred; in eight successful cases Murphy's button had been employed. With reference to the part resected, clinical records seemed to show that resection of jejunum was not more serious than that of ileum. Untoward post-operative symptoms were not always in direct proportion to the length of bowel removed, other factors being of importance, such as the length and condition of the remaining bowel, its power of compensation, and the condition of the patient prior to operation. It was necessary to bear these points in mind in forming deductions from the result of experiments on healthy animals. The metabolic disturbances which might follow operation were described. In this connexion it was stated that carbohydrates were digested with greater ease than fats or nitrogenous foods, the most suitable diet being one rich in carbohydrates and poor in fat. Metabolic disturbances were absent in proportion to compensatory hypertrophy in the remaining bowel. This compensation was occasionally unstable, Brenner's case being recalled, in which compensation broke down two and a half years after operation. In conclusion, the speaker urged that where the choice at operation lay between closing the abdomen and a heroic resection, the latter should be attempted as affording the only chance of saving life.

The communication was discussed by Mr. STRUTHERS and Mr. QUARRY WOOD.

Exhibition of Specimen.

Dr. H. L. WATSON WEMYSS showed a specimen of a large gastric ulcer from a man aged 39, admitted to hospital was haematemesis and profound anaemia. Medical measures were unavailing, and death occurred from haemorrhage before blood transfusion or other surgical treatment could be carried out.

Rebiews.

TUBERCLE BACILLI IN THE BLOOD.

A HANDBOOK of the treatment of tuberculosis[1] which has been edited by Professor Ernst Loewenstein of Vienna contains articles by various contributors, but only that by Professor G. LIEBERMEISTER seems worthy of extended notice. His researches upon the changes found in veins, especially in the pulmonary veins, arteries, and lymphatics, and upon the presence of tubercle bacilli in the blood stream, will tend to modify current opinion.

Liebermeister assures us that with patience any master of methods can demonstrate the presence of tubercle bacilli in the blood in every case of open pulmonary tuberculosis and in many cases of early disease. He therefore supports Rosenberger's much criticized view. According to these authorities it is more consistent with histological and biological facts to look on the pulmonary lesion as a part of a general disease. No doubt in many cases tuberculosis may begin in the lungs, and it is not possible to say when it becomes general. This happens when the tubercle bacilli enter the blood stream, and there is no way of fixing the time of this event. In rabbits and other animals, if free tubercle bacilli in not too great numbers are injected into the arteries, the tuberculous disease may become concentrated in the lungs.

It seems to be proved that even in acute miliary tuberculosis there are not more tubercle bacilli circulating in the blood than in cases of open tuberculosis of the lungs. Tubercle bacilli do not increase and multiply in the blood stream—nor do pneumococci or typhoid bacilli. It may be that the production of antibodies in the blood inhibits the growth of the bacilli, and so prevents acute miliary tuberculosis. If the tubercle bacilli in the blood stream are free and few in number they pass through the capillaries apparently unchanged and remain inert. Some of them may reach the tissues by the lymphatics and still remain inert. But if they are numerous and form clumps or become agglutinated with leucocytes they tend, like cocci, to cause emboli in vessels, especially the smallest, and these, with their bacilli, produce miliary tubercles in organs. The emboli may be large enough to form infarcts, and then to produce perplexing results; for example, cases have been reported in which hemiplegic symptoms suddenly arose, suggesting cerebral haemorrhage. In other circumstances large numbers of free bacilli may escape into organs and cause acute tuberculosis, and the lesion, for example, in the meninges, may be very similar in its histology to the lesions caused by streptococci, pneumococci, or influenza bacilli; but careful examination of the inflammatory new formation may disclose myriads of tubercle bacilli in the tissues without any tubercles. Thus tuberculosis in an acute form may be mistaken for sepsis. At the other extreme free bacilli may escape into the tissues in small numbers and cause mitosis of the fixed cells of the organ or chronic inflammatory changes of varying nature and degree terminating in fibrosis.

Possibly these bacilli have been attenuated in their virulence during their long or short career in the blood. They may even be disintegrated by the action of the blood and its antibodies and then liberate locally toxins—mainly endotoxins—which cause mild local inflammations. These vascular effects and lesions can be directly seen in lesions of the eye (conjunctiva, iris, and scleroid coat), and their histology is different from the tubercles in the choroid first observed by Cohnheim. The same effects may be seen in the skin, but not so clearly. Thus many eye lesions and skin lesions, chronic or mild in character and apt to recur, are nothing else than the effects of tubercle bacilli lodged in these organs. Liebermeister considers that there are good reasons for thinking that similar chronic and mild lesions frequently occur in other organs beyond the range of direct vision, and produce symptoms and disturbances which we fail to trace to the true cause, sometimes because we do not

[1] *Handbuch der Gesamten Tuberkulose-Therapie.* Herausgegeben von Professor Dr. med. E. Loewenstein. Band I, Teil I und II. Berlin and Vienna: Urban und Schwarzenberg. 1923. (Teil I: 7¼ × 10½, pp. 288; 25 figures, 6 plates. Teil II: pp. 756; 30 figures.)

suspect tuberculosis, and often because the specific test with tuberculin is not used. These mild secondary lesions of tuberculosis are rarely associated with the tertiary manifestations. The general symptoms of early tuberculosis—such as digestive disturbances, anaemia, loss of energy, altered pulse rate and low tension, flushings, laryngeal catarrh, and in women amenorrhoea or metrorrhagia—may be the effects of mild lesions in the digestive tract, bone marrow, nervous system, larynx, and uterine mucous membrane respectively. Like some other observers, Liebermeister has found tubercle bacilli in several cases of callous ulcer of the stomach. It follows that the successful treatment of tuberculosis demands that we should attack the disease before it has developed the tertiary manifestations. This is only possible if specific measures are adopted both for diagnosis and treatment, because the appearance of tubercle bacilli in the sputum is a relatively late event. These are the views of Professor Liebermeister, and they are not very different from the views I expounded a quarter of a century ago, but it is satisfactory to find them confirmed by Professor Liebermeister.

But because tubercle bacilli are in the blood and even in the tissues it does not follow that there is definite disease. They may remain inert or they may cause merely slight symptoms and changes. In such cases the bacilli may be few, and the natural or specific resistance of the tissues may be fair or good. But this disposition and reaction of the invaded tissues exist, though they cannot be expressed in mathematical terms. Certain tissues, such as nervous structures, muscles, and the pancreas, resist infection. The lungs, kidneys, and lymphatic glands are prone to disease, and in certain families there is a special liability to disease of a particular organ. Certain diseases (influenza and paratyphoid B) favour infection by tubercle bacilli. Traumatism is often a factor—especially in the bones and joints and epididymis. The tubercle bacilli are in the tissues or in the blood before the injury, which may be toxic or chemical as well as produced by force. Further, in miliary tuberculosis, since the tubercles are generally of the same size and age, their formation must be favoured by some predisposing cause—that is to say, the relative specific immunity of the infected tissues must be depressed.

The frequency of lung disease may be due to oft-repeated mild infections, but the source of the infection may still be the blood stream. Liebermeister thinks it probable that, except in lupus, the blood stream is probably the chief source of the infective agent. It is interesting that in Australia abundance of sunlight seems to render the skin immune. On the other hand, in children organs beyond the reach of sunlight—such as lymphatic tissues—are prone to tuberculosis; in adults these tissues are less affected. Disposition of tissue is a variable and indeterminate factor. The effect of specific treatment in tuberculous diseases of the eye affords a visible demonstration of the value of tuberculin, and there is reason for assuming that similar effects may be produced when the lesions are out of sight. In fact, the more we realize that tuberculosis is a general disease the more reason there is for applying a remedy that affects the body as a whole, and the sooner the remedy is applied the more radical the cure is likely to be. Loss of resistance may activate the tubercle bacilli at any moment, and since there is no easy way of determining the degree of resistance which exists in organs or in the body, we should be alive to the need of constant efforts to create relative specific immunity. Absolute immunity we cannot at present hope to establish, but relative. Liebermeister holds that the ordinary sanatorium measures rarely if ever secure biological cure. His opinion is summarized as follows:

> "It is far more difficult to heal the established disease of an organ than to cure the general symptoms produced by disease in the blood vessels. Therefore it follows that the success of treatment is the greater the earlier the stage of the disease in the organ and the more the general symptoms are in evidence. The general symptoms accompanying the secondary stage of tuberculous disease (Petruschky, Ranke) belong directly to the domain of active and specific treatment. The early diagnosis of tuberculosis by specific tests and the prompt use of specific remedies ensures the biological cure of tuberculosis which cannot be secured by non-specific measures."

He believes that many so-called rheumatic affections of the eye are the effect of the tubercle bacillus. The term "rheumatism" embraces a medley of joint inflammations which differ radically in their etiology—some due to gonorrhoea, others to acute rheumatism, and others again to tuberculosis. In 1909 (Weber-Parkes essay) I advanced evidence to prove that erythema nodosum should be regarded as a tuberculous infection because it reacted to tuberculin and yielded to tuberculin treatment when salicylates failed. On similar grounds I concluded that there was an asthmatic form of tuberculosis.

The view now so strongly supported by Liebermeister that there is a haematogenous form of tuberculosis is well worthy of consideration. His essay suggests an explanation of many baffling forms of chronic disorder which, in the light of the researches here recorded, may possibly be subacute and chronic forms of infection with tubercle bacilli.

W. CAMAC WILKINSON.

POULSSON'S "PHARMACOLOGY AND THERAPEUTICS."

A VALUABLE service has been rendered to the English-speaking portion of the medical profession by the publication of a translation of Professor POULSSON'S *Textbook of Pharmacology and Therapeutics*.[2] The English version has been edited by Dr. W. E. DIXON, and the translation is excellent. The materia medica and doses have been brought into line with the British and the United States Pharmacopoeias. Professor Poulsson's textbook is a standard work in Scandinavia and in Germany and therefore affords an excellent means of comparing the therapeutic practice of those countries with the opinions prevalent in England.

Pharmacology is a science with very wide boundaries, and it is always of interest to note to which portions of the subject the author of a textbook devotes chief attention. The book under review is written rather more from the point of view of the clinician than is the case with most English textbooks of pharmacology, for chief attention is devoted to the action of drugs upon man, although adequate attention is paid to the facts discovered from animal experiment. A full account is given of the effects produced by the therapeutic administration of drugs, and the toxic effects produced by poisonous doses are also dealt with fully.

The matter is classified roughly according to the pharmacological actions of the drugs, and groups of drugs producing similar effects are placed together. The translator has succeeded in maintaining an easy and readable style throughout and gives a concise and clear account of the important actions of each of the drugs dealt with.

The book is thoroughly up to date and deals with such recently discovered substances as ergotamine, insulin, the hydroquinine derivatives, and the bismuth compounds used in syphilis.

When the opinions expressed in this book are compared with those enunciated in the leading British textbooks, the reader is impressed chiefly with the large measure of general agreement that exists. On various points, however, differences in therapeutic practice are revealed. The statement which most surprised us was that "Nitrous oxide is employed only for very brief operations, almost exclusively in dentistry—where it has now been superseded by local anaesthesia—and for relieving the pains of childbirth." This statement is apparently intended to cover both the use of pure nitrous oxide and the use of nitrous oxide and oxygen. The practice of giving ether by mouth as a cardiac stimulant is referred to as well known, although it is not endorsed by the author. The use of camphor as a cardiac and respiratory stimulant in febrile diseases is also much more firmly established on the Continent than in this country.

These differences are on the whole exceptions, and in general the therapeutic measures recommended in the book are very similar to those employed in Great Britain. Moreover, the author has succeeded in maintaining a very fair

[2] *A Textbook of Pharmacology and Therapeutics.* By E. Poulsson, Professor of Pharmacology in the University of Christiania. English edition edited by W. E. Dixon, M.A., M.D., F.R.S. London: William Heinemann. 1923. (Roy. 8vo, pp. xi + 519; 32 figures. 25s. net.)

balance between the opinions of the laboratory and the opinions of the ward as regards the action of drugs.

The textbook deals with all the drugs commonly used in clinical practice, and in addition discusses the action of organ extracts, vitamins, antitoxic serums, and vaccines. It is of interest to note that polyglandular therapy is not merely a local trouble confined to England, for the author remarks, "all sorts of mystic productions have been called to life by organotherapy, and manufacturers with a keen eye to business have very readily fallen in with the demand for a specific remedy for each organ. In this way one can obtain cerebrine for diseases of the brain, pulmonine for pneumonia and tuberculosis, cardine for heart disease, oculine for eye diseases, prostatine for hypertrophy of the prostate gland, kidney tablets for nephritis, etc. Discussion of these absurdities is superfluous." As this quotation indicates, the author maintains an attitude of healthy scepticism and does not mind expressing his opinion about preparations which he considers worthless. The only criticism we have to make is that the book would have been improved by the addition of more illustrations; there are only thirty-two.

The author gives no references, which is perhaps wise, since it would be impossible for reasons of space to refer to more than a small fraction of the literature in pharmacology; it is, however, satisfactory to note that he quotes the more important British and American work in pharmacology; this is a pleasant contrast to many of the textbooks published on the continent of Europe.

Detailed criticism of an extensive textbook such as that before us is of course impossible, but enough has been said to show that this translation of Professor Poulsson's work is a valuable addition to the textbooks of pharmacology published in English.

OPERATIVE TREATMENT OF GLAUCOMA.

A BOOK on the operative treatment of glaucoma by an authority of such a wide knowledge of the subject as Lieut.-Colonel H. HERBERT[3] is sure of a welcome from all those who are interested in diseases of the eye. At an early date the author was convinced of the inadequacy of the classical operation of iridectomy as a remedy for glaucoma, and, during the early years of this century he was one of the pioneers in devising other forms of operative treatment which might afford a better prospect of cure.

Much of the book is devoted to the description and to the advocacy of a measure which aims at the production of a subconjunctival iris-prolapse through a corneo-scleral wound, and at the incarceration of the uvea in the scar. The author claims that this form of operation affords a relative certainty of relief without risk of serious hypotony, is permanent in its effect, and is a safe proceeding if due care be exercised. He recognizes, however, that if proper precautions are not taken there is an increased risk of early infective complications, including sympathetic ophthalmitis; but he argues that this risk can be practically eliminated by ensuring an effective conjunctival covering, by avoiding unnecessary traumatism of the iris, and by paying proper attention to conjunctival antisepsis. Colonel Herbert claims that this form of operation has stood the test of time; and he suggests that "in Egypt, India, and the East generally, treatment by iris-inclusion might apparently with advantage become at once the routine practice for the great majority of primary glaucomas." It is assumed that a prolapsed iris, which becomes adherent to its conjunctival covering, is, by a thickening of the membrane, fully protected against the occurrence of a late infection or of sympathetic disease; but it must be noted that such an adhesion may not occur if there is an early leakage of aqueous in front of the iris, and that a dangerous rarefaction of the conjunctival covering may then develop and lead to loss of protection.

Some space is devoted to a discussion of the conjunctival changes associated with the passage of the aqueous through a scar beneath the membrane, and to the evil effect which follows an over-stretching of the tissue caused by an inability of the fluid to diffuse readily into the surrounding subconjunctival tissue. The author considers that the aperture made in sclero-corneal trephining and the drainage afforded by the operation are the worst conceivable with regard to the danger of late infection.

It is difficult to accept Colonel Herbert's view that the iris-inclusion operation he recommends is relatively free from the risk of sympathetic disease. Many, if not the majority, of the operations on which he bases his conclusions appear to have been performed in India. Sympathetic ophthalmitis rarely occurs in that country, even in those cases in which one would most expect to see it. He admits that the prolapsed uvea does not always become attached to the covering membrane, and that localized vesicular changes may then develop in the conjunctiva and render the eye liable to a late infection. The deliberate induction of a prolapse of the uvea—even though it is protected by intact conjunctiva—must appear a most dangerous proceeding to the majority of ophthalmic surgeons; if the integrity of the covering cannot be guaranteed in every case, it will be judged to be all the less appropriate. The prospects of a patient attacked by sympathetic ophthalmitis are so dreadful that any operation which needlessly incurs the smallest risk of the disease should be condemned without hesitation.

The value of the author's criticisms upon the operation of trephining is qualified by his admission that he has never himself practised the method, and that his experience of the results of the operation is limited. His picture of the type of subconjunctival diffusion which ordinarily follows a properly performed trephining will not be accepted by those surgeons who have had experience of the operation. He acknowledges that the diversity of the results in different hands shows that imperfect technique has been responsible for some of the late infective danger. That this danger is often exaggerated is shown by the fact that some surgeons who were formerly inclined to magnify it have with further experience completely altered their views.

The author's wedge-isolation operation and small flap sclerotomy are of value, and his description of these and the discussion upon their indications will be read with interest. The book contains many valuable hints upon points of technique which are applicable to most operations in which the eyeball is opened; it will be read with pleasure by all ophthalmic surgeons, although it is likely that few of them will feel inclined to agree with the author in his views upon the safety of an iris-prolapse operation.

A VETERINARY ENCYCLOPAEDIA.

DURING recent years veterinary literature in England has been more inclined to specialize, and the textbooks which the general practitioner and the student have had as works of reference have been, with a few exceptions, translations from foreign publications. The truth, of course, is that the subject is so vast, and the veterinary surgeon of the present day has so many animals to deal with, that it is a matter of great difficulty to put together in a book of reasonable size even a summary of the different diseases to which each animal is liable.

It has to be remembered that the animal physician has to deal with patients whose anatomical arrangements vary very much, and whose digestive and other physiological attributes are often equally variable in individual species. For this reason the varieties of ailment are many, and the symptoms often of an entirely different character. Besides this, each class of animal has its own idiosyncrasies to drugs.

The veterinary profession owes Professor WOOLDRIDGE a debt of gratitude for the immense labour which he has put into the compilation of the *Encyclopaedia of Veterinary Medicine, Surgery and Obstetrics*[4] which has just been

[3] *The Operative Treatment of Glaucoma.* By H. Herbert, F.R.C.S., Lieutenant-Colonel, Indian Medical Service (Retd.). London: Baillière, Tindall and Cox. (Demy 8vo, pp. viii + 152; 31 figures. 10s. 6d.)

[4] *Encyclopaedia of Veterinary Medicine, Surgery and Obstetrics.* Vol. I, Veterinary Medicine; Vol. II, Surgery and Obstetrics. Edited by G. H. Wooldridge, F.R.C.V.S., M.R.I.A., F.Z.S. London: H. Frowde, and Hodder and Stoughton. 1923. (Cr. 4to: Vol. I, pp. xiv + 546 + xxiii; 143 figures, 1 plate. Vol. II, pp. viii + 460 + xxx; 205 figures, 4 plates. £6 6s. net.)

published in two volumes; to it, in addition to his duties as editor, he has himself contributed a very large portion.

He has obtained the collaboration of a large number of colleagues, each a specialist on the subject on which he writes; in this way he has presented to his readers, whether medical or veterinary, a work which is up to date and of standard quality.

We cannot enter on a detailed consideration of the various sections of the book, but it is sufficient to say that they are of value, not only to veterinary practitioners and students, but also to pathologists who desire to study the comparative aspect of disease. The publishers have done their work well, and the plates are excellent.

SCIENCE AND PHILANTHROPY.

VARIOUS as are the types of men who do big things in pure and applied science, a certain resemblance in the temper of mind may be detected among them. They may be pricked on by ambition for fame, or money, or both, but the underlying influence ever acting is something else—easy to recognize but difficult to define, a mixture of curiosity to know why and of impatience to overcome an obstacle, a sort of pique because the problem is baffling. In the man of applied science the terms of the mental process seem to be, "The thing won't work: why won't it work? it shall be made to work." This is exemplified all through the life of Sir Alfred Yarrow which his wife has just written,[5] from the time when, as a boy, he rigged up a device to put out his aunt's candle, much to that lady's indignation. As a young man he undertook to build a steamboat for Lake Nyassa, fulfilling conditions other engineers had declared incompatible; later on he designed and built destroyers faster than any boats afloat, and finally—he was over 72 when it began—he made invention after invention during the war.

By reason of all his successes as an engineering inventor and constructor, Sir Alfred Yarrow became rich, and being a man in whom an ardent desire to help his fellows is combined with common sense and knowledge of the world, he studied the question of how a man might best dispose of his money with the detachment he brought to bear in designing a steamer to go up the rapids of the Nile, or in contriving how to get another knot out of a destroyer. One of his benefactions was the Yarrow Home for Convalescent Children at Broadstairs, an institution which has frequently been described in our columns. It is for the children of educated people, and the endowment was deliberately limited so that contributions from the parents should be necessary. Again Sir Alfred Yarrow made, subject to certain conditions, the initial gift which rendered possible the erection of the new out-patient department at the London Hospital; one of the conditions was that every out-patient (children excepted) should pay something towards the expenses of material, though medical advice should be free. It was found that nine out of ten patients were ready to give something; this was twenty years ago. Until the other day Sir Alfred Yarrow's chief gift to experimental science was the tank built at the National Physical Laboratory for testing the design of ships. This has been surpassed by the magnitude (£100,000) and by the conditions of the gift he made to the Royal Society last February. He directed that the fund should be administered for the Society with unfettered discretion "by the best people from time to time available," and "that the money should be used to aid scientific workers by adequate payment, and by the supply of apparatus or other facilities, rather than to erect costly buildings, because large sums of money are sometimes spent on buildings without adequate endowment, and the investigators are embarrassed by financial anxieties." The donor went on to record his "firm conviction that a patriotic citizen cannot give money, or leave it at his death, to better advantage than towards the development of science."

The book contains a large number of pictures which really illustrate the text.

[5] *Alfred Yarrow: His Life and Work.* Compiled by Eleanor C. Barnes (Lady Yarrow). London: E. Arnold and Co. 1923. Demy 8vo, pp. xv+328; illustrated. 10s. 6d. net.)

NOTES ON BOOKS.

WE have received the first two volumes of a collection of reports written by various members of the Pará Public Health Service and edited by Dr. H. C. DE SOUZA ARAUJO[6] to commemorate the centenary of the independence of Brazil. The first volume contains a frontispiece which appropriately consists of a portrait of Oswaldo Cruz, to whose pioneer work in the domain of sanitary science in Brazil we recently drew attention (March 3rd, 1923, p. 391). The history of rural sanitation in Pará down to 1920 is related by Dr. J. A. Dias Junior, who ascribes the remarkable decline within recent years in the prevalence and mortality of malaria to improved sanitation. Dr. B. L. Rutowitcz gives a description of the hospitals at Belem, the capital of Pará; the water supply, sewage system, markets, and slaughter-houses of the town each forms the subject of a separate report. Special mention should be made of that by the director, Dr. J. Aben-Athan, on the recently established Institute of Hygiene at Belem, which combines the functions of a State laboratory with those of a Pasteur institute; it has seven sections devoted respectively to coprology, haematology, venereology, immunology, chemistry, preparation of hypodermic products, and treatment of rabies. Three inquiries undertaken at the institute are reported—on the principal causes of error in the Wassermann reaction, on the results of treatment for rabies, and on a new method of cultivating the gonococcus and preparing antigonococcus vaccines. Considerable interest also attaches to the report by Dr. Araujo on the frequency and extent of helminthiasis and malaria in the State of Pará, as well as on the prophylaxis of other diseases, especially small-pox and plague. The second volume[7] is devoted to an account of the prophylaxis and treatment of leprosy and venereal disease in Pará. The editor describes the organization of the service for the treatment of venereal diseases and an institution recently established at Belem. The volume is illustrated by numerous photographs of the hospitals, sanatoriums, dispensaries, and municipal buildings of Pará.

We noticed the appearance of the seventh edition of Professor Hawk's *Practical Physiological Chemistry* only some sixteen months ago; the eighth edition,[8] which has now appeared, has been revised and some additions have been made. The book, however, remains very much the same as it was before, and is an excellent work for the student and of value to the general practitioner who wishes to become acquainted with present-day methods.

We have received a copy of the sixth edition of a *Tabular View of the Income Tax and Super Tax from 1842 to 1924.*[9] The information given is in a condensed but easily intelligible form and will be found useful by many taxpayers. The publication has been brought up to date and we can recommend it to anyone requiring an abbreviated statement for reference, though, in our opinion, something would have been gained by expanding the "Reminders and Advice" at the expense of crowding out some of the information as to the early income tax rates—for example, the fact that the maximum rate of tax fell from 7d. to 5d. in the £ in 1858 does not assist a perplexed taxpayer greatly in these days, nor is it conducive to that peaceful frame of mind appropriate to the task of rendering a return for income tax purposes.

"In Geography there is still much to be desired." So wrote Miss Barbara Pinkerton from her academy for young ladies on Chiswick Mall to the parents of Amelia Sedley, when Amelia and the last century were both in their teens. Geography was a very dry "subject" then, and the idea of making it a pleasure would have horrified Miss Pinkerton; it was not made very interesting in our own school days. Fortunate, therefore, is the child of to-day whose teachers put into his hands such attractive little textbooks as the *Junior Regional Geographies*, of which Book II, *The British Isles*,[10] has (for some reason or another) been sent to us for notice. According to the joint authors, Mr. W. H. BARKER and Mr. LEONARD BROOKS, the aim of this series is to furnish "a preparatory course for more advanced regional studies." It is intended for use in the upper classes of elementary schools and the lower forms of secondary schools.

[6] *A Prophylaxia Rural no Estado do Pará.* Pelo Dr. H. C. de Souza Araujo. Pará-Belem: Typ. da Livraria Gillet. 1922. (Med. 8vo, pp. 410; illustrated.)

[7] *A Prophylaxia da Lepra e das Doenças Venereas no Estado do Pará.* Pelo Dr. H. C. de Souza Araujo. Belem-Pará: Livraria Classica. (Med. 8vo, pp. 311; illustrated.)

[8] *Practical Physiological Chemistry.* By P. B. Hawk, M.S., Ph.D. Eighth edition, revised. London: J. and A. Churchill. 1923. (Med. 8vo, pp. xvi + 693; 197 figures, 6 plates. 24s. net.)

[9] *Income Tax—Tabular View, 1842-1924.* Published by Oliver and Boyd, Tweeddale Court, Edinburgh. (Price 1s. 1d., post free.)

[10] *Junior Regional Geographies.* Book II, *The British Isles.* By W. H. Barker, B.Sc., F.R.G.S., and L. Brooks, M.A., F.R.G.S. London: University of London Press, Ltd. 1923. (Cr. 8vo, pp. vii + 174; 48 illustrations. 2s.)

British Medical Journal.

SATURDAY, JUNE 23RD, 1923.

VACCINE TREATMENT OF TUBERCULOSIS BY A NEW METHOD.

As to the efficacy of vaccines in the treatment of bacterial infections there have been many opinions, but there must be few who have not felt some degree of disappointment at the slow and limited progress which has followed the classical researches of Pasteur and of Koch. The methods described by Professor Dreyer in the paper an account of which is given at page 1065 aim at the removal of one difficulty, and probably an important difficulty, in the production of active immunity.

If antibodies are to be produced it is essential that the antigen should come into intimate contact with the cells of the body of the patient. Dreyer assumes that the absorption of bacterial antigens is hindered by the fatty envelope by which the body of certain classes of micro-organism is surrounded. This fatty envelope is intimately associated with the staining properties of those bacteria which we designate "acid-fast" or "Gram-positive." It is for this reason that antibody formation has been more readily evoked by the injection of Gram-negative bacteria, and that comparatively little success has been obtained by the inoculation of emulsions of acid-fast or Gram-positive varieties.

The essential feature of the investigations lies in the separation of the more soluble constituents of the bodies of bacteria from the relatively insoluble fatty and lipoid substances which form the bacterial envelope. The greater part of the experimental data is concerned with the tubercle bacillus, and the methods employed in the case of this micro-organism are described in detail. Tubercle bacilli obtained from a glycerin broth culture are treated in the way outlined at page 1066, and eventually a product is obtained which is entirely non-acid-fast and is described as a "defatted antigen." In the case of Gram-positive bacteria, such as staphylococci and the anthrax bacillus, the object of the method is to obtain a product which has lost the property of retaining the stain by Gram's method.

The defatted antigens are either suspended in saline and used for the production of active immunity by injection, or digested with trypsin for the preparation of a reagent suitable for use in precipitation or complement fixation experiments. Rabbits injected with the defatted products of the tubercle bacilli developed antibodies which could be demonstrated by precipitation, complement fixation, and agglutination experiments. The published experiments show that animals injected with defatted antigen produce a serum which reacts not only with the defatted antigen but also with a recognized antigen of the usual type prepared from tubercle bacilli. For this purpose Boquet's and Nègre's antigen was chosen. On the other hand, the defatted antigen reacted *in vitro* not only with the serum of animals which had been injected with this defatted antigen, but also with the serum of animals which had been injected with an ordinary emulsion of living tubercle bacilli. Suitable control experiments, in which normal serum and immune serums other than antituberculous serum were employed, were of course made. These experiments showed that the defatted antigen was specific, and could be used with success for the production in experimental animals of antibodies to the tubercle bacilli. Moreover, the antigen after treatment with trypsin proved to be a very useful reagent for the detection of antibodies in the blood of tuberculous animals. Apart from the all-important therapeutic possibilities of this new preparation, it seems probable that a significant step has been made towards obtaining a trustworthy serum test for tuberculous disease. It is worthy of note that, while well marked serum reactions took place in mixtures of the antigen both with the serum of animals injected with this antigen and with the serum of animals injected with living tubercle bacilli, the most pronounced reactions were obtained with the serum of animals which had been injected with living tubercle bacilli and were subsequently given doses of the defatted antigen.

The most interesting and at the same time most important of the experiments are those which related to the treatment of tuberculous guinea-pigs with defatted antigen. Full details are given of experiments on four guinea-pigs. These animals were infected with a strain of living tubercle bacilli. The culture which was used is, on the whole, of slight virulence, and has usually produced death in four to ten months after infection. In the first experiment described, treatment was commenced twenty-eight weeks after infection. The animal then weighed 630 grams, some 200 grams less than the average weight for its age. The spleen was large, and could easily be felt, and there were three or four enlarged glands in the inguinal region. Treatment consisted in ten injections of defatted antigen at intervals varying from three to thirteen days. The whole treatment occupied eighteen weeks. Two weeks after the cessation of treatment the animal looked perfectly healthy, and was of normal weight for its age (906 grams). As a result of treatment the animal gained 300 grams in twenty weeks. The spleen and glands seemed smaller. In two other animals satisfactory results were obtained. In the fourth animal considerable improvement was observed as the result of treatment, but the animal died shortly after the birth of young. The histological appearances of the organs of this animal presented an appearance of anaemic necrosis with fibrosis.

Encouraging results were also obtained by the treatment of tuberculous rabbits with the defatted antigen. Professor Dreyer is careful to point out that only time can show whether this beneficial effect is permanent, and that to attain certainty it will be necessary to watch the animals for a long period without further treatment, and then kill them and make a search for tuberculous lesions in their organs. Nevertheless, the results obtained are very striking. The susceptibility of the guinea-pig to the tubercle bacillus is well known, and the results already obtained are sufficient to justify considerable confidence in the value of the method.

As regards the treatment of human disease, a beginning has been made. A few cases have been treated at the Brompton Hospital, and 60 cases are under treatment at the London Hospital; the interim report on these cases by Drs. Fildes and Western is quoted in full at page 1067. They have observed in nearly all cases improvement which, in their opinion, is of an order which exceeds obviously that obtainable by any other form of treatment applicable to these conditions. It is, of course, too soon to attempt to express any

judgement on the results obtained on human cases of tuberculosis, but the experiments carried out on animals justify us in entertaining great hope of the efficacy of this method, and we shall look forward with the greatest possible interest to the full report of the first batch of cases treated.

The possibility of a cure for tuberculosis which is contained in Dreyer's work is of such outstanding importance that we have given little space to the consideration of the results obtained with other bacteria. But from a theoretical, and eventually perhaps from a practical standpoint also, the most interesting observations are those concerned with the anthrax bacillus. Pasteur had succeeded in attenuating the virulence of this micro-organism by growing cultures at 42° C. Dreyer has shown that when grown at this high temperature the anthrax bacillus loses its capacity to retain the stain by Gram's method. Moreover, by suitable experiments Dreyer has demonstrated that bacteria from cultures grown at 42° C. are more readily killed by both normal and anti-anthrax serum than bacteria from cultures grown at 37° C. The attenuation of virulence produced by growth at the higher temperature is thus associated with and presumably directly caused by the loss of the fatty envelope.

In this experiment may lie an explanation of such success as has been hitherto achieved by the vaccine treatment of bacterial infections. To many people it has seemed remarkable that a patient grievously ill from the presence of millions of micro-organisms in his tissues should be expected to benefit from the subcutaneous injection of a few millions of the same micro-organism grown on an agar slope. Dreyer has shown that the *Staphylococcus aureus* and the anthrax bacillus grown on artificial media have more resistance and a thicker envelope of fat when grown at 37° C. than at 42° C. It is possible that micro-organisms, when actively pathogenic in the human tissues, may have envelopes thicker still, and so possess still greater powers of resisting antibacterial substances than micro-organisms growing on artificial culture media even under the most favourable conditions which we can contrive. The favourable effect of the injection of a vaccine seems to be due to its providing the tissues of the patient with micro-organisms which are more easily soluble, and hence of higher antigenic value, than those already present in his tissues.

It is difficult to summarize the result of Professor Dreyer's experiments, and it is impossible to forecast the effect they may have on the further development of methods for the diagnosis and treatment of infective disease. But putting the matter at the lowest, he has made an important contribution to our knowledge of bacterial immunity, and has devised methods by which it may be obtained where hitherto it has been unobtainable. It is the originality of the methods employed and the nature of the results he has obtained which invest his communication with such great interest. It must be regarded, as we feel sure he would wish to have it regarded, as a preliminary communication. The experiments on animals are few, and the time during which these animals have been observed, having regard to the importance of the issue, is short. From the full details published it is clear that every effort has been made to avoid experimental error and the mistake of drawing premature conclusions which the facts so far established do not warrant.

It is only a tribute to the value and importance of Professor Dreyer's experiments and observations to say that we shall await their confirmation and extension with the liveliest interest. The results already obtained are few, but they are in themselves of the greatest importance and sufficient to justify the fullest possible investigation of methods which have been employed with such striking success. It is evident that the investigation now reported is a milestone on the path of progress towards the cure of bacterial disease.

AMBULANCE TRAINS.

FIVE years have not yet elapsed since the armistice, but many people seem already to have forgotten that the great war, endured for over four years, entailed fighting operations by the British on at least six fronts, and went through several fairly distinct phases. Furthermore, in discussions concerning its events and its possible lessons, even among those whose experience of matters was too personal not to be vivid, it is commonly easy to perceive that the speakers or writers, whichever they may be, fail to realize that, however active a part they played in matters, their experience of the war as a whole was in all cases inevitably limited either by space, owing to the nature of the work assigned to them, or by time, owing to wounds, sickness, or other causes. But for discussions on the subject to be fruitful, or for lessons to be soundly drawn, the knowledge on which the two are based should extend to all the fronts concerned and to all the phases that the war as a whole underwent.

This is why we are disposed to welcome the short history of the early days of British ambulance trains in France, by Colonel G. A. Moore, C.M.G., M.D.[1] It is of special value for two reasons in particular: in the first place because it deals with a phase of the war of which few, even of its veterans, had any experience, seeing that the whole British force at the time was not much larger than some of the latter-day army corps; and in the second place because here and there in its pages is to be found internal evidence—to adopt the phrase of the old theologists—that most of it must have been compiled almost contemporaneously with the events that it records. In the memory of most medical men who served in France, as in that of most combatants and most departmental officers and men, the term "ambulance train in France" must mean a long corridor train, of which all parts, when the internal doors were open, were visible from end to end, its different compartments fitted with close equivalents to ordinary ambulance vans, provided with heating arrangements, possessing facilities for the performance of operations when necessary, and carrying an ample staff of nurses. An ambulance train in France must seem to them to have been—as in fact for several of the later years it was—a moving hospital on wheels. But this, as some must recollect, and as Colonel Moore clearly shows, was not always the case. In the first six months of the war there were no hospital trains in France in the sense in which that term was used at a later date; the nearest equivalent to them was a train made up of carriages, 1st, 2nd, or 3rd, whichever could be got, in which the patients sat or lay on the ordinary seats to be found in such compartments. At an earlier period still the difference was even greater; there might be one or two passenger coaches, but the bulk of the train consisted of luggage and freight vans fitted up for lying-down cases by Brechot stretcher apparatus. That this was the case was no fault of the Army Medical Department nor even of the War

[1] *The Birth and Early Days of our Ambulance Trains in France, August, 1914.* By Colonel G. A. Moore, C.M.G., D.S.O., M.D. Second edition. London: J. Bale, Sons, and Danielsson, Ltd. 1922. (Med. 8vo, pp. 24; 5 plates. 1s. net.)

Office. The two combined had gone as far as could be expected by providing in anticipation of a great war an adequate supply of Brechot apparatus, and by sending it over to France in one of the very first ships to sail after war was declared. To have provided hospital trains such as those eventually formed would have been impossible, partly owing to lack of knowledge as to the exact kind of vehicle required, partly owing to the impossibility of finding in England sidings sufficiently large to hold any considerable number of trains so lengthy as a hospital train. When the occasion for their use arose it was only little by little that exact knowledge was gained of the requirements in respect of accommodation, the number of patients that could conveniently be carried, the height of the carriages from the ground, the right kind of heating, the engine power required, and other technical details.

The change from the initial to the second form of hospital train was due chiefly to the immense energy of twelve medical officers and some forty-five of the rank and file told off for train work, but also to the good temper of the French officials of one kind and another. They allowed the English to beg, borrow, and steal coal carriages wherever they could find them, at a time when the French themselves were very hard up for like accommodation, owing to so much of the rolling stock of the French railways having been sent to the South of France to be out of the way of the enemy. Whether the British soldier actually gained very much by the change in respect of having his chances of eventual recovery increased is perhaps more open to question than might at first seem to be the case. The question is perhaps impossible of solution. There can be little doubt that his comfort was increased and suffering diminished, but the two classes of train did not bring down men in directly comparable condition. The later type carried men who for the most part had already received all the active surgical treatment they required; most of the occupants of the earlier trains arrived at the base straight from the field ambulances, the casualty clearing stations of the time being then few in number and embryonic in point of development. The patient was still more or less dull from the initial shock of his wound, but had undergone no further shock such as operation must cause. No doubt, of course, the later system was infinitely superior, inasmuch as among the men it brought down a much larger percentage finally recovered. In view of the introduction of air fighting, it is impossible to foretell what part of the mechanism of warfare will at some future date be useful, but remembering that front lines will always have to be cleared of sick and wounded, and that the Brechot apparatus can be fitted into any kind of vehicle on wheels, there is room for the belief that this apparatus or its equivalent will be found playing a part in future wars, whatever else may disappear.

THE ASSOCIATION'S HOUSE.

THE Supplementary Report of Council printed in this week's SUPPLEMENT contains a piece of information which, though necessarily guarded in its terms, will be recognized by every member as something of the greatest significance for the future work of the British Medical Association. We refer to paragraph 266, headed "Association Premises." The announcement is brief, but to the point. It will be followed in due course by a full statement which there is every reason to hope will receive the cordial approval of the Association at large. To those acquainted with the work carried on at 429, Strand, it has become evident in recent years that these premises are inadequate for the greatly increased and still increasing activities of the various departments. One result of this has been that accommodation, originally meant for the use of members generally, has been absorbed for office purposes in order to meet urgent demands upon the limited space available. Meanwhile, and for the same reason, notwithstanding the growth in the number and work of committees and sub-committees, rooms intended for committee meetings have had to be taken over for business purposes. Expansion of the existing premises was found not to be feasible. The urgency of the situation was represented to the Council in April, and the Council, after full consideration, decided that the time had come when steps should be taken towards securing a British Medical Association building, not merely adequate for immediate office requirements, but sufficient to provide accommodation for future needs and developments. As a result of very full inquiries it was possible to make a definite report to the Council on June 13th, and the outcome—so far as can be announced at the moment—is recorded in the Supplementary Report of Council.

THE SERVICE OF EXPERIMENT TO PRACTICAL MEDICINE.

THE address Sir Walter Fletcher gave at the opening of the new biochemical laboratory at St. Thomas's Hospital well deserves to be read and filed for future use; it is printed in full at page 1068. He takes, if we may presume to say so, the right line in the discussion of the services scientific medicine is rendering to human welfare. It may be all very obvious to persons of scientific training, however far their particular line of work may be from biology or medicine, but we are apt to forget how small a proportion of even the educated public possesses such training. Sir Walter Fletcher instanced the use of insulin, which is obstructed by a regulation that animal experiments may be done at the medical college but not in the hospital, although they are done directly for the hospital and although the hospital cannot do its work without them. As he truly said, in tending the sick and suffering we can show no effective mercy without knowledge, and this knowledge can only be gained by the study and pursuit of truth. Ought we not to say boldly, as Sir Walter Fletcher implied, that the action of those who do all they can by falsehood and innuendo to hamper the advance of knowledge is, in this matter of preventing, curing, or alleviating disease, gross inhumanity? The excuse made for such persons is that they are ignorant. If only they would make barren ignorance their gaoler! But they do not. They rush from platform to platform shouting their infamies, revelling in false stories of cruelty until they come under a form of obsession not wholly unlike that of which the miserable sadist is a victim.

PREVENTION OF OPHTHALMIA NEONATORUM IN DENMARK.

WE have received through the Ministry of Health a communication written by Dr. Gordon Norrie, vice-president of the Royal Danish Board of Health and oculist to the Royal Danish Institutes for the Blind, after reading the final report of the Departmental Committee on the Causes and Prevention of Blindness. He rightly thinks that information on the methods established in Denmark for the reduction of ophthalmia neonatorum and blindness resulting therefrom may be of interest "in the country of his ancestors." In the Royal Lying-in Hospital at Copenhagen Credé's method was adopted as a routine practice in 1882, and with the best results. From the year 1886 he himself instituted propaganda with a view to making the method compulsory upon all midwives, and since 1900

every midwife is required immediately after birth to instil a solution of silver nitrate (1 in 150) into the eyes of the child. The midwife is forbidden to wash the eyes before the instillation, as it is considered that some infectious matter may thus be washed into the eyes; midwives are taught to wipe the eyelids with dry gauze or cotton-wool. In Denmark midwives assist at almost every delivery, and it is rarely that a doctor alone is present. A legally regulated midwifery system has existed since 1714; the midwives undergo a strenuous training for one year. He writes of them as "excellent." Until the year 1857 private effort provided for the training of blind children, but in that year the State opened the Royal Blind Institute (Det Kongelige Blindeinstitut) in Copenhagen. Education of blind children at the institute is not compulsory, but with rare exceptions application for admission is made in the case of every blind child, so that the figures for the institute give the number of blind children in the country. They are admitted at the age of 10 to 11 years; but for the past twenty-five years there has been a preparatory school at the seaside sixty miles from Copenhagen to which children from 6 to 7 years of age are admitted, and some two years ago at the same place a home for blind babies was opened. Dr. Norrie has charge as ophthalmic surgeon of these three schools for the blind. A table is given showing the difference in the incidence of blindness from ophthalmia neonatorum before and after 1900, the year of the institution of compulsory prophylaxis. In the twenty-five years 1875-99 the total number of cases was 55; the highest number (15) occurred in the quinquennium 1890-94, and the lowest (7) in 1880-84. In the first quinquennium after compulsory prophylaxis was established there were 16 cases, and Dr. Norrie attributes this failure to insufficient instruction of the midwives. In the succeeding quinquennia the number of cases were 3, 3, and 1, and there was one case in 1920. The expectation of blindness from this disease is now no more than one case every other year, a very good result for a country with a population of three millions and a quarter. He does not expect this cause of blindness to disappear altogether, for "it is impossible by prophylaxis to prevent the infection taking place at the time of birth." He adds that he has never seen a case of blindness due to small-pox, for in Denmark vaccination has been compulsory since 1810.

HYPERPLASIA OF EPITHELIAL AND CONNECTIVE TISSUES OF THE BREAST.

SIR GEORGE LENTHAL CHEATLE'S researches on the changes which take place in the breast as a prelude to the later development of papillomata and of duct and acinous carcinomata have been reported in this journal (BRITISH MEDICAL JOURNAL, June 3rd, 1922), and the recent paper which he has published in the *British Journal of Surgery* (vol. x, No. 40, 1923) deals with the development of the hyperplasia of the connective tissues of the breast, which he classifies under three heads according to its relation to the layer of elastic tissue which surrounds the ducts and acini. "Hyperplasia intra-elastica" mainly occurs in the delicate connective tissue which lies immediately internal to the elastica in the ducts and acini, and occurs in breasts of women over 30; it may manifest itself as a diffused condition affecting the whole length of a duct and all or some of the acini from which it leads, or as a localized tumour in a duct or in the acini. The diffused type rarely occurs in breasts in which no other lesion can be discovered; it may be associated with carcinoma and multiradicular papillomata, but it is important to note also that it may be absent in breasts where carcinoma and papillomata occur. The localized condition is a tumour formation which is usually superimposed on the diffused condition above described. In its simplest form the tumour forms an oval swelling inside the elastica which bulges into the lumen of the duct, and from the intra-elastica fibrous tissue large intracanalicular fibro-adenomata may develop. When growing in acini the connective tissue around the acini may undergo hyperplasia so marked that a collection of acini thus affected resolves itself into a distinct isolated tumour and forms a fibro-adenoma. The class of cases to which the term "hyperplasia elastica" is applied exists only in the diffuse form affecting ducts and acini. There is a combined hyperplasia of the elastica and the fibrous tissue with which it is intermingled, the growth being delimited at the margin of the fibrous tissue that immediately surrounds the ducts and acini. The process is usually widely distributed, and affects most of the ducts and acini in a breast, being accompanied by desquamative hyperplasia of the epithelium. Most breasts which contain carcinomata do not show enormous hyperplasia of the elastica, and the same may be said of breasts containing multiradicular papillomata; but Sir Lenthal Cheatle declares that he has been so impressed by the hyperplasia he has noticed in "proemial" breasts and in those suffering from Paget's disease of the nipple that he would be "most careful to examine the entire breast in which there was enormous hyperplasia of the elastica before passing the gland as free from carcinoma." The third class—"hyperplasia extra-elastica"—concerns the fibrous tissue immediately outside the ducts and the intralobular connective tissue of the acini, and includes many well known varieties of fibro-adenoma of the breast. This type can be subdivided into pericanalicular and periacinous tumours, of which there is both a localized and a diffuse form, and the intracanalicular tumours. Except in the type of the diffuse fibro-adenomatosis, which occurs after 30 years of age, all forms may grow in young and old breasts. Sir Lenthal Cheatle believes that it is exceedingly rare for carcinoma to originate in a localized fibro-adenoma. Unsuspected fibro-adenomata, often only just visible to the naked eye when examining a section of a whole breast, occur in at least 28 per cent. of all breasts containing carcinoma. There are no special clinical signs of the different types of tumours described, and the chief practical outcome of these observations seems to be that it is safer to take away the segment of the breast in which fibro-adenomata grow. Although the different forms of hyperplasia are described as three distinct classes, any one class may be complicated by the presence of some pathological changes of another order, and all the pathological changes to which attention has been drawn may, in fact, be phases of a consecutive evolution of disease. Lastly, the author insists that all hyperplasia of epithelium confined within the ducts of the breast is not necessarily benign.

THE HISTORY OF THE CARDIO-VASCULAR SYSTEM.

THE selection of the matter for an address, seldom an easy task, requires a broad outlook in order that the varying minds in the audience may all be interested. This is perhaps best accomplished by choosing a relatively common disease or condition and reviewing the most recent views thereon. In his historical sketch of the heart and circulation given before the Queen Margaret Medical Club Dr. G. A. Allan[1] of Glasgow has adopted this course. Beginning with Egypt, B.C. 1400, he points out that the word "heart" is derived from a Sanskrit word meaning "to leap," and that the Egyptians regarded the heart as the seat of life and the source of good and evil thoughts, and that the individual's claim to everlasting life would be tested by the weighing of the heart, which should not be removed from the body during the process of embalming. After glancing at the views of Hippocrates, Aristotle, and Erasistratus of Alexandria, who described the valves of the

[1] Allan, G. A.: *Glasgow Med. Journ.*, 1923, N.S. xvii, 296-313.

heart, Galen's doctrines on the cardio-vascular system, which held the field for 1,400 years, are explained. The first to dispute his authoritative statements was Leonardo da Vinci, who discovered the action of the cardiac valves and threw doubt on the passage of blood through the interventricular septum. The next advance came from an unexpected source—the bitter disputations connected with the Reformation—for in his *Restitution of Christianity*, which was responsible for his martyrdom, Michael Servetus (1553) clearly described the lesser circulation through the lungs. The weakness of the claim made for Caesalpinus that he anticipated Harvey's great discovery is briefly explained, and then a quotation from Shakespeare is utilized to show the popular conception of the circulation at the time of Harvey's demonstration. In the three hundred years since then percussion and auscultation, of which the latter was advocated by William Stokes of Dublin in 1825 in his *Introduction to the Stethoscope*, are milestones which lead up to the use of instruments of precision; Dudgeon's sphygmograph of 1860 was expanded into Mackenzie's ink polygraph; Marey in 1876 laid the first foundation of Riva-Rocci's sphygmomanometer; and A. D. Waller's work in 1889 was followed by Einthoven's string galvanometer and Thomas Lewis's researches with the aid of the electrocardiograph. The description of the auriculo-ventricular bundle by Stanley Kent (1892) and by His (1893), Tawara's account of the auriculo-ventricular node (1904) and Keith and Flack's discovery of the sino-auricular node are further landmarks worthy of permanent recollection. In answer to the self-imposed question, "What amount of work is accomplished by the heart?" Dr. Allan calculates that during seventy years the heart drives out about 250,000 tons of blood.

VITAL CAPACITY.

DR. JOHN HUTCHINSON, in 1846, suggested that the volume of maximum expiration following a maximum inspiration, which he called "vital capacity," was a valuable measure of physical fitness; he tried to establish precise quantitative relations between vital capacity and other physical measurements. From observations on 2,130 persons of varied classes, but all considered to be healthy, he deduced that for every inch of height from 5 ft. to 6 ft. eight additional cubic inches of air at 60° are given out by a forced expiration, and that the relation between vital capacity and weight was not linear throughout. He estimated that the effect of age was to decrease vital capacity by rather more than 1 cubic inch for each year. He also thought that the standing height was correlated with sitting height, and that the latter was approximately constant. He held that vital capacity was governed by the mobility of the chest rather than its volume, and endeavoured to show that disease affected vital capacity and might be detected thereby. Later Fabius of Amsterdam attempted to prove that stem length was more closely related to vital capacity than height, but the results he published do not bear this statement out. In 1858 Arnold of Heidelberg confirmed Hutchinson's conclusions, but attached more importance to chest circumference. In 1911 Dr. Edgar Schuster published in *Biometrika* the results of his observations on 959 Oxford undergraduates. The mean of the vital capacity for these was higher than in any of Hutchinson's healthy classes. Garvin, Lundsgaard, and Van Slyke investigated the vital capacity of tuberculous subjects. When their figures are examined in the light of variations in fit persons it appears that it was only in the more advanced cases of disease that the difference in vital capacity between the diseased and healthy could be regarded as far beyond the probable range of chance fluctuations. In 1919 Professor Georges Dreyer urged that stem length and not height was the appropriate correlate of vital capacity. Biological evidence led him to believe the constants to be in proportion to body surface, and with Henson he published tables for the estimation of normal weight and vital capacity from stem length and chest circumference and for the estimation of vital capacity from weight. In a recent paper[1] in *Biometrika*, Cripps, Greenwood, and Newbold have made an attempt to show how closely vital capacity can be expressed as a function of stature, sitting height (stem length), and body weight, by linear equations or simple exponential functions. They obtained measurements of 1,238 candidates for commission in the Air Force. They analysed the sample and repeated the analysis on the measurements of candidates passed as fit. Very little difference was found between the constants of the whole sample and of this selection. From a comparison of the coefficients of correlation and the correlation ratios they inferred that the regressions were not strictly linear, though nearly so. A large number of technical analyses were made, involving the computation of many regression equations. The conclusions they draw are that, taking vital capacity as the dependent, and weight and height as the independent variables, multiple linear regression formulae gave slightly closer results than the "rational" formulae of Professor Dreyer, and that the former method has the advantage of showing the extent of the improvement in the estimate of vital capacity by the use of more independent variables. Their results agree substantially with Hutchinson's and show no advantage in the substitution of stem length for height. A further conclusion is that "upon the evidence now available it does not appear that either biometric or 'rational' formulae can deduce from the non-physiological or ordinary anthropometric constants, estimates of normal vital capacity confined within sufficiently narrow limits to possess real prognostic value in individual cases."

ANNUAL DINNER OF THE HARVEIAN SOCIETY OF LONDON.

AN unusual number of distinguished guests attended the annual dinner of the Harveian Society of London, held at the Connaught Rooms, Great Queen Street, on Thursday, June 14th. The President of the Society, Sir T. Crisp English, presided at the dinner, and 137 members and guests were present. The toast of the Harveian Society was proposed by Mr. G. K. Chesterton, who modestly described himself as a journalist. He dealt humorously with the profession to which he claimed to belong and warned his hearers against attaching too much importance to the heavily typed headlines which are designed to advertise the journalist's wares. The President replied for the Society, and said that the membership of the Society was now 314, and that the average attendance of members and guests at the meetings held during the past year was 54. Sir StClair Thomson proposed the health of the sister societies, which included the Royal Society of Medicine (represented by its President, Sir William Hale-White), the Hunterian Society, the Chelsea Clinical Society, the West London Medico-Chirurgical Society, and the Kensington Medical Reading Club, represented by their respective Presidents, Sir Bruce Bruce-Porter, Dr. J. Campbell McClure, Mr. A. G. Wells, and Mr. Debonnaire Maunsell. Sir William Hale-White replied in a speech which scintillated with many appropriate little anecdotes. The toast of the guests was proposed by Dr. Charles Buttar, who referred to the wide range of position and professions of the guests. They included Lord Elphinstone, who, as Lord High Commissioner, represents the King in Scotland; Lord Montagu of Beaulieu, a member of the Road Board, interested in aviation and motoring; Mr. J. Monteith Erskine, Member of Parliament for St. George's, Hanover Square; Sir Robert Hill, Director-General of the Medical Department of the Navy; Sir

[1] *Biometrika*, vol. xiv, Parts 3 and 4 (March, 1923).

William Leishman, who shortly succeeds Sir John Goodwin as Director-General of the Army Medical Service; Sir Arthur Sloggett; Sir Edward Worthington; and Sir Hercules Read, Keeper of the British Museum. Literature was represented by Sir Anthony Hope Hawkins and Mr. G. K. Chesterton; art by Sir William Llewellyn and Mr. Ralph Peacock; the law by Sir Richard Muir, Sir Edward Marshall Hall, Sir Henry Curtis Bennett, and Mr. Claughton-Scott. The Borough of Paddington, in which the Society holds its meetings, was represented by Prebendary G. N. Sharp, the Vicar of Paddington, and the Mayor, Alderman H. V. Kenyon. In reply to the toast Lord Montagu spoke of his connexion with the Road Board, comparing the traffic on the roads with the circulation of the blood, with occasional aneurysms where the thoroughfares had been widened; Sir Anthony Hope Hawkins, in a witty speech, referred to the subconscious state; and Sir Richard Muir gave his views on doctors in the witness-box. He concluded with a story of how an expert medical witness was cross-examined by a medical man in the dock. He regarded this as one of the best pieces of medical cross-examination he had heard, for what the medical man in the dock did not know about abortion would have gone on a threepenny bit. The Harveian Society of London is to be congratulated on the success which has attended its activities since the war. The Society, which is one of the oldest of general practitioner societies, is now approaching its centenary, but it displays all the energy of youth. The inclusion amongst the guests at its dinner of so many representative men from other professions is a practice worthy to be copied by other medical societies, since it will tend to establish understanding between the medical profession and those with whom it is brought into relation in questions which affect the community.

OXFORD OPHTHALMOLOGICAL CONGRESS.

THE fourteenth annual meeting of the Oxford Ophthalmological Congress will begin on Thursday, July 5th, when, after a formal opening by the Master, Mr. Sydney Stephenson, a discussion on the relation of dental sepsis to diseases of the eye will be opened by Mr. W. R. Ackland of Bristol and Mr. W. Lang of London. A number of members have given notice of their intention to join in the discussion. In the afternoon several papers will be read, including one by Mr. Harrison Butler on the organization of ophthalmic clinics and hospitals. On Friday morning, after the reading of two papers—one of them by Dr. Lundsgaard of Copenhagen on the Finsen treatment of conjunctival diseases—the Doyne Memorial Lecture will be delivered by Mr. H. Moss Traquair, assistant ophthalmic surgeon to the Royal Infirmary, Edinburgh; his subject is the differential characters of scotomata and their interpretation. Afterwards a paper will be read by Professor J. Van der Hoeve of Leiden. An afternoon meeting will be held to hear papers read. On Saturday morning a discussion on coal-miners' nystagmus will be opened by Mr. R. J. Coulter, ophthalmic surgeon to the Royal Gwent Hospital, Monmouthshire. The discussion is to be strictly limited to the diagnosis of the condition from the clinical point of view and its relations to the Workmen's Compensation Act. There will be two dinners, the one on Wednesday, July 4th, and the other—the annual dinner of the Congress—on Friday evening.

NURSING IN FRANCE.

THE Act which was passed in France in June, 1922, and amended in February, 1923, instituting a State diploma for French nurses, after a suitable period of study and examination, recognized the new standing that nursing had gained in France during and since the war. The foundation of a monthly professional journal has now given an impetus to the improvement of educational facilities for nurses in France and the development of a corporate spirit among them. *L'Infirmière Française* is intended primarily for nurses, but makes an appeal also to medical practitioners and others interested in the organization of nursing. It is published under the patronage of the French Minister of Health, and under the scientific direction of Professor Calmette, of the Pasteur Institute, who contributes an eloquent introduction to the first number. The other articles cover a considerable range of subjects. Dr. Courcoux writes on the feeding of tuberculous patients and of patients with a predisposition towards tuberculosis. Dr. Raymond Grégoire discusses the first dressing that should be applied to a compound fracture until the surgeon arrives. Dr. Henri Paillard contributes an illustrated article on the care of the mouth during acute infectious fevers; shorter articles are on such subjects as domestic disinfectants, and on how to put drops in the eye. A section of the journal is devoted more particularly to the professional interests of the organized body of nurses. In the first number this section includes an article on the professional moral of nurses, and another on nursing in America; the Act instituting a nursing diploma is printed in full, with comments, and answers to correspondents are given. In future it is intended to discuss month by month questions of practical importance to nurses, the contributors including physicians, surgeons, general practitioners, nurses, and other specially qualified persons. It is hoped to aid in the development of the professional knowledge of all nurses, without overstepping the limits of their normal activities.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

THE ninth annual conference of the National Association for the Prevention of Tuberculosis is to be held in Birmingham, the proceedings extending over July 12th, 13th, and 14th. There could be no more appropriate centre for this conference, for nowhere has the problem of tuberculosis been attacked more vigorously, and a tuberculosis service more efficiently and progressively administered, than in the great Midland city. The provisional programme lacks little of comprehensiveness either in the names of those who have promised to take part in the discussions or in the range of subjects embraced by the agenda. The wide field of activity covered by the programme of the conference indicates how great is the effort still necessary, more particularly in co-ordination of method in the common aim. Foremost of the subjects down for discussion is the very formidable problem of advanced tuberculosis, more especially with reference to the prevention of infection. This is a question that will have to be faced more courageously and dealt with more drastically than has hitherto been the case in this country. Hardly less in importance is the discussion on the industrial side of the question, which will occupy the morning session of the second day. There is great scope in this direction for the educational activities of the National Association, for the problem of tuberculosis in many trades is not so much a purely occupational question as one of the conditions under which work is carried on. The issues raised in this year's conference are fundamental, and the importance of the sociological aspect of tuberculosis cannot be too strongly emphasized.

THE honorary Fellowship of the Royal College of Surgeons in Ireland will be conferred on Monday next, June 25th, on Sir Harold Stiles, K.B.E., M.B., C.M., Regius Professor of Clinical Surgery in the University of Edinburgh. The ceremony, at which the President, Sir William de Courcy Wheeler, will preside, will be followed by the Charter Day dinner in the College Hall.

A SPECIFIC TREATMENT OF TUBERCULOSIS.

ABSTRACT OF A REPORT ON SOME NEW PRINCIPLES IN BACTERIAL IMMUNITY AND THEIR APPLICATION IN REFRACTORY INFECTIONS, INCLUDING TUBERCULOSIS,

BY

PROFESSOR GEORGES DREYER, F.R.S.

(From the Department of Pathology, University of Oxford.)

IN a lecture delivered at the Institute of Pathology and Research, St. Mary's Hospital, London, on June 14th, Professor Georges Dreyer set forth some new principles in bacterial immunity, stated their experimental foundation, and discussed their application to the treatment of refractory infections, and to tuberculosis in particular. The following account of Professor Dreyer's researches and results is founded upon the text of his full paper published in the current number of the *British Journal of Experimental Pathology*[1] (June, p. 146).

GENERAL STATEMENT OF THEORIES AND RESULTS.

If the whole field of experience in bacteriotherapy and serotherapy, using those terms in their widest connotation, be reviewed, it will be perceived that in spite of the great successes obtained in some directions, notably as a consequence in this country of work done by Sir Almroth Wright and his colleagues, there is a disappointing lack of uniformity in the results. When an explanation of this is sought it is at once seen that, speaking in a general way, the great successes of bacterial therapy and prophylaxis have been won in that group of diseases—including, for example, typhoid and paratyphoids and plague—which are due to non-acid-fast and Gram-negative micro-organisms, whereas failure is the general rule in diseases caused by acid-fast and Gram-positive micro-organisms, such as *B. tuberculosis*. This generalization applies only to the bacterial bodies themselves, not to their soluble products such as toxins. The rule is not absolute; for example, partial success has been obtained with pneumococcal antiserum and with staphylococcus vaccines; yet failure is very far from rare with vaccines of Gram-negative bacteria such as the gonococcus. But although the rule does not hold absolutely, it is in the main correct.

Bacterial Lipoids.

Since acid-fastness and Gram-positiveness have been clearly proved to be associated with the presence in the bacterium of certain waxy or fatty substances, which may be spoken of collectively as lipoid or lipoidal substances, there was an *a priori* probability that the failure to produce immunization was due to them. Though little is at present known about the chemical questions involved, yet it seems possible that these substances protect the specific bacterial proteins and prevent their liberation from the body of the bacterium, thus checking or completely stopping the production of the sole adequate stimulus for the immunity reaction of the infected organism. Support for this view is to be found in certain work done by Douglas in 1921 at the National Medical Research Institute on the digestion by trypsin of bacteria extracted with acetone. He was invariably successful in digesting and obtaining immunity responses with Gram-negative bacteria, such as the dysentery bacillus, the typhoid bacillus, and the gonococcus, but the Gram-positive organisms either were not digested at all (staphylococcus) or underwent apparent digestion, but gave rise to no immune bodies (*B. welchii*).

THEORY OF "DEFATTED" BACTERIAL ANTIGEN.

This being so, it was decided to attack the problem by attempting the removal (by extraction) of the lipoidal fraction of some representative acid-fast and Gram-negative bacterium. The tubercle bacillus was selected because it has a highly developed lipoid constituent, and is, in many respects, a very robust and resistant micro-organism. A large quantity of tubercle bacilli was killed by heat and extracted with acetone. Though large amounts of lipoidal substances were removed, the bacilli remained acid-fast. It was then recalled that a tuberculous tissue fixed with formalin often, when suitably stained, showed far fewer tubercle bacilli than the same tissue fixed with mercury perchloride. Various experiments made it plain that the bacilli could not be deprived of the quality of acid-fastness by formalin alone; in the preparation of tissues for section a number of other reagents are used, including fat-solvents such as alcohol, xylol, and chloroform. The suggestion, therefore, arose that the phenomenon might be due to the application of formalin and fat-solvents in succession to the bacilli, and this was found to be the case, the tubercle bacillus becoming non-acid-fast. As it was known that bacteria killed with formalin or extracted with acetone retain their antigenic power, there was good reason to hope that the residue of the tubercle bacilli after treatment with formalin and extraction with acetone would retain all or part of the specific properties of the bacillus and that this residue could be used for immunization. The truth of this expectation was established by numerous experiments. It was also found that it was possible to deal with other acid-fast bacteria in the same manner and to reduce Gram-positive micro-organisms to the Gram-negative condition.

Retention of Antigen by "Defatted" Bacilli.

The next step was the demonstration of the capacity of the "defatted" bacteria to react with specific antiserums, and this led on to the experimental proof of their antigenic action in the animal body, where they gave rise, on injection, to the production of well known "immune substances," such as bacteriolysins, complement-fixing bodies, precipitins, and agglutinins. It was next established that these antigens could exert definite curative effects on animals suffering from bacterial infection.

Retention of Antigen by "Defatted" Bacilli.

In order to complete this section of the work it was thought desirable to ascertain whether this somewhat heroic process of extraction with formalin and acetone had a destructive effect on the essential antigen of Gram-negative bacteria. The *B. typhosus*, a rather sensitive micro-organism, was chosen; it was subjected to the same process as the tubercle bacillus, and it was found that it retained its ability to cause the production of immune substances. It has not been proved that none of the antigenic power is lost during the process, but it was clearly established that any loss that occurs is only partial and therefore unimportant. These observations were held to prove that the protective action of the lipoid substances in the micro-organisms had a very important effect on the treatment by vaccines of the infections caused by the acid-fast Gram-positive micro-organisms, and that these "defatted" micro-organisms, when injected, would readily be digested by the body fluids, and their substances thus set free to produce the antibodies desired.

NATURE OF "ATTENUATION."

At this point of the investigation a second and closely related train of thought suggested itself. No clear explanation has ever been given of Pasteur's classical demonstration of the immunizing properties of anthrax cultures "attenuated" by growth at 42° to 43° C. The new knowledge that "defatted" anthrax bacilli can be digested by trypsin, whereas the untreated bacilli are in the main not digested, justified the hypothesis that growth at 42° to 43° gives rise to a deficient formation of the normal "fatty" constituent, and thus renders the bacilli more easily susceptible to the digestive action of the body fluids. Such bacilli, when injected into the living body, would be, at least in part, readily disintegrated, and the release of their antigen would cause a rapid immunity-response in the animal before the Gram-positive, and therefore more resistant, bacilli developed in sufficient number to overwhelm the normal resistance of the body.

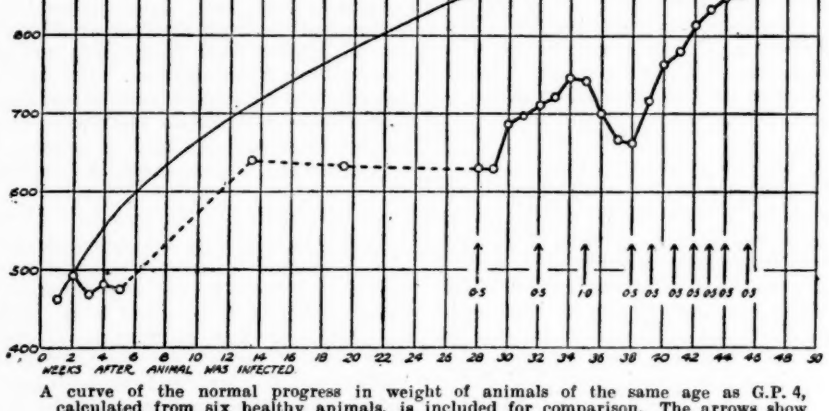
The prediction that growth at 42° to 43° would give rise to a weakening or disappearance of the Gram-positiveness of anthrax bacilli was verified by a few simple experiments not only for that bacillus, but also for a stock laboratory strain of *Staphylococcus aureus*.

[1] London: H. K. Lewis; Toronto: The Macmillan Company of Canada. 7s. 6d.; annual subscription £2.

POWER OF THE LIPOIDAL SUBSTANCES TO PRODUCE LOCAL REACTION.

The formalin-acetone process which produces a relatively complete separation of "fatty" substances from the specific proteins made it possible to throw light upon another set of unexplained phenomena. It was well known that the subcutaneous injection of dead tubercle bacilli or staphylococci caused a severe local reaction with infiltration and sometimes necrosis, often unaccompanied by any noteworthy general disturbance. The observations already detailed suggested that the local disturbance might be due entirely to the highly indigestible and irritating "fatty" constituents of the bacilli and not to their specific antigenic proteins.

Subcutaneous injection into suitable animals of the acetone extracts of tubercle bacilli and of staphylococci, previously treated with formalin, showed that the theory was completely in accord with the facts. The injection into normal animals of lipoids from tubercle and from staphylococci gave rise to infiltrations which might persist for a long time; in one instance the undissolved mass of lipoids ulcerated through the skin and discharged itself, while a larger dose of "defatted" bacilli than corresponded to the dose of lipoids caused no local reaction; this was an additional proof that the lipoids of the bactericidal body formed an important obstacle to the solvent and protective action of the body fluids.



A curve of the normal progress in weight of animals of the same age as G.P. 4, calculated from six healthy animals, is included for comparison. The arrows show the date of injection and the quantity.

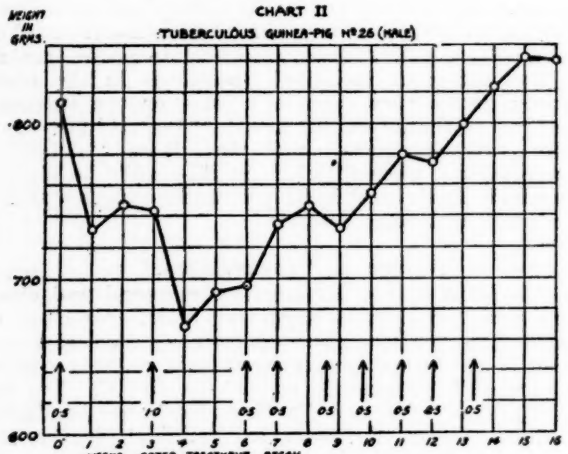


CHART II
TUBERCULOUS GUINEA-PIG No 26 (MALE)
WEIGHT IN GRMS.
800
700
600
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
WEEKS AFTER TREATMENT BEGAN
0·5 1·0 0·5 0·5 0·5 0·5 0·5 0·5 0·5

The arrows show the date of injection and the quantity.

THE METHOD OF PREPARING "DEFATTED" ANTIGENS.

The method by which Professor Dreyer prepares "defatted" antigens is fully described in his paper in the *British Journal of Experimental Pathology*, and those who propose to follow in his footsteps will refer to this; we propose here to give only some general indications. It is to be remembered that the term "defatted" is not intended to indicate that all the lipoidal substances present in the micro-organisms have been removed, but merely certain lipoidal substances, soluble in acetone after formalin treatment. In the case of the acid-fast and Gram-positive bacteria the indication that the extraction has proceeded far enough for the purpose is the change of the staining reactions to non-acid-fastness or Gram-negativeness respectively.

Tubercle bacilli are grown on the surface of glycerin broth or other suitable liquid medium for two or three weeks; the fluid is decanted off and the mass of tubercle bacilli ground up into a paste in an agate mortar with a few drops of formalin. More formalin is gradually added with constant grinding until 150 to 200 c.cm. of formalin have been added to each 5 grams of bacilli weighed wet. The suspension of tubercle bacilli in formalin is heated in a flask to 100° C. for four hours, filtered, and the residue washed three or four times with acetone. The suspension is then filtered through calcium-free paper and the residue extracted three or four times with acetone, and then in a Soxhlet apparatus. The insoluble residue is dried and ground in a sterile mortar. A weighed quantity of the extract is ground up with sterile saline solution into a paste, more saline being added during the grinding; it is then centrifuged. The supernatant fluid is pipetted off and when diluted with saline containing formalin constitutes the antigen suspension. The actual weight of "defatted" organisms is ascertained by methods which are fully described, and the fluid suspension is so adjusted with saline that one cubic centimetre contains one-fifth of a milligram of dry "defatted" tubercle bacilli. Suspensions for use are made up to contain a definite weight of "defatted" tubercle bacilli per volume of fluid, the actual proportion varying with the purpose for which the injection is to be made.

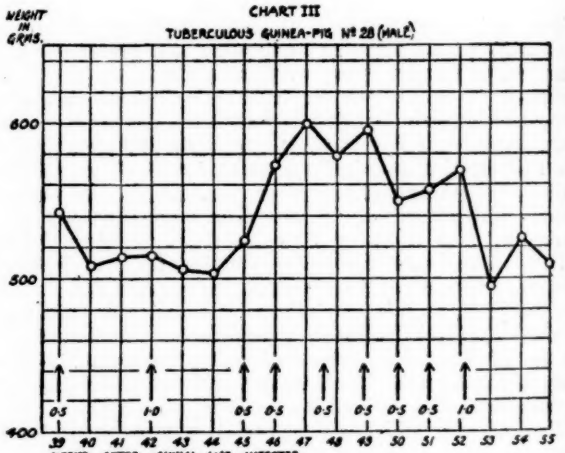


CHART III
TUBERCULOUS GUINEA-PIG No 28 (MALE)
WEIGHT IN GRMS.
600
500
400
39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55
WEEKS AFTER ANIMAL WAS INFECTED
0·5 1·0 0·5 0·5 0·5 0·5 0·5 0·5 1·0

The arrows show the date of injection and the quantity.

Digestibility by Trypsin.

Although it is generally accepted that proteins after treatment with formaldehyde cannot be digested with trypsin, this does not apply to the "defatted" micro-organisms, but the rate and completeness of digestion depend on a number of factors as yet undetermined. The irregularities appear to be more pronounced with the tubercle antigen than with the others.

Production of Immune Substances by "Defatted" Antigen.

Four rabbits were injected with "defatted" tubercle bacillus antigen and developed, in varying degrees, anti-substances the presence of which in the serum was demonstrated by test tube experiments. These substances were complement-fixing bodies, precipitins, and agglutinins. So far as complement fixing was concerned, it was clearly established that tubercle bacillus antigen is specific in its reaction not only with the serum derived from a horse immunized with whole tubercle bacilli, but also with the serum of a rabbit suffering from tuberculosis. A precipitinogen was prepared by digesting "defatted" tubercle bacilli with trypsin, and proved to be specific in its reaction. It was also ascertained that the injection of "defatted" antigen into normal rabbits caused the production of specific agglutinins, and that these substances were present also in the serum of animals infected with tubercle bacillus, whether they had or had not received subsequent injection of "defatted" antigen.

EXPERIMENTS ON INFECTED ANIMALS WITH "DEFATTED" TUBERCLE ANTIGEN.

Experiments were performed with a view of studying the therapeutic effects of "defatted" tubercle antigen on animals suffering from well defined tuberculosis. In his paper Professor Dreyer gives full details of an experiment on four guinea-pigs inoculated with tubercle bacillus of the human type, but of low virulence. Animals infected with it usually die in six to eight months after infection, the extremes being four to ten months, and *post-mortem* examination has invariably shown generalized tuberculosis affecting the spleen, liver, lungs, and lymph glands.

One guinea-pig (No. 4, male) was inoculated with this strain on June 15th, 1922; treatment was begun twenty-eight weeks later (December 29th, 1922). The animal was then under the average weight for its age, the spleen was large, and there were enlarged glands in the inguinal regions, three or four in the right and one or two on the left. Injections of "defatted" antigen were given at the dates indicated by the arrows in Chart I. Twenty weeks after the beginning of treatment the animal looked healthy, was of the normal weight for its age, the spleen was smaller, the glands on the right side had become smaller and harder, and on the left had practically disappeared, being replaced by what felt like a pad of fibrous tissue. This was forty-eight weeks after inoculation; had it been untreated the animal would have been expected to die within ten months (about forty-two weeks) from the date of infection.

Another guinea-pig (No. 26, male) was inoculated with the same strain of tubercle bacilli some months before treatment was begun. The animal, though it looked healthy, presented an enlarged spleen and large masses of glands in both inguinal regions. As will be seen from Chart II the animal, after an initial fall, steadily gained weight. Eight weeks after the beginning of treatment the glands in both inguinal regions had entirely disappeared.

A third guinea-pig (No. 28, male) thirty-nine weeks after inoculation with tubercle bacilli was greatly under weight, had an enlarged spleen, and large glands in both inguinal regions, one of which was ulcerating and discharging caseous material. Four days after the first injection the ulcer was smaller, and after six days more had healed. Within twenty-four hours after the second injection the scar had broken down, but healed again within a week; by this time the glands on both sides had become smaller. After the third injection the scar again opened in about sixty-six hours, but healed in six days. This occurred again after the fourth injection, and after the sixth and seventh. Four months after the treatment was begun the glands were greatly reduced in size, the ulcer was soundly healed, but the animal had decreased in weight (Chart III).

A fourth guinea-pig (No. 27, female) was inoculated and treated in a similar manner, but the experiment was vitiated by the animal becoming pregnant. After littering it went rapidly downhill and died on the fifth day. The cause of death was not ascertained; the heart blood was sterile. Its organs were carefully examined by Dr. A. G. Gibson, whose detailed report is published in the *British Journal of Experimental Pathology*. The organs affected were the inguinal and axillary lymphatic glands, the liver, the lungs, and the spleen. The lesions in all were tuberculous granulomata; very few tubercle bacilli were found in the sections. All the lesions, especially those in the liver, showed abundant fibrosis, and throughout there was an absence of the lymphocytic reaction seen in active tuberculosis. Dr. Gibson observes that "the presence of giant cells, together with the increase of fibrous tissue, lend support to the evidence which points to a tendency to heal."

Experiments were also made on four rabbits, three being submitted to a course of treatment with "defatted" tubercle antigen, while the fourth served as a control. These experiments, which have extended over three months, are not yet regarded as complete. The animals were inoculated with living bovine tubercle bacilli: the results in the three animals treated appear to indicate arrest of the disease; in the control animal it had made slow progress. The conclusions Professor Dreyer draws from the results of treatment of animals are expressed in the following terms:

"The experiments just described justify, in my opinion, the conclusion that treatment with the 'defatted' antigen brings about a definite improvement, both general and local, in animals infected with *B. tuberculosis*. Additional evidence for this view is given by the guinea-pig No. 27 which died, for its organs show what seems indubitably to be a healing of tuberculous lesions. Of course only time can show whether this beneficial effect is permanent. In order to attain certainty on this question, it will be necessary to watch the animals for a long period without further treatment, and then kill them and make a search for tuberculous lesions in their organs."

TREATMENT OF TUBERCULOSIS IN MAN.

The fact that small quantities of the "defatted" antigens were devoid of toxic action having been established, it was felt to be justifiable to begin to test their effect in minute doses on human patients and to attempt to ascertain whether their action would be more favourable than that of the various tuberculins and vaccines of the usual types.

Early in April Dr. A. C. Inman injected "defatted" tubercle bacillus antigen into two patients suffering from active febrile tuberculosis of the lungs and pleurae. The patients, who were in the care of Dr. Bosanquet, had been under observation for a long period and were steadily getting worse. They were selected as being cases only likely to improve if some extra aid could be given. No local or focal reaction followed the initial inoculation, nor was there any appreciable febrile reaction. It was then decided to undertake the treatment of a case of acute toxic pulmonary tuberculosis in a patient aged 21. No local, focal, or general reaction followed; the temperature became lower and there was some amelioration of the general condition. The doses used were very small. Professor Dreyer recognized that it is too early to express any opinion on the effect of the treatment on the disease.

Drs. P. Fildes and G. T. Western also used the treatment in some cases in the London Hospital in April and at the conclusion of his lecture Professor Dreyer read the following report from Drs. Fildes and Western:

We have under treatment with Dreyer's antigen 60 cases of tuberculosis. Among these are 36 cases of tuberculous adenitis, 11 cases of cutaneous tuberculosis, 4 cases of pulmonary tuberculosis, both active pyrexial and apyrexial, 3 cases of joint and bone tuberculosis, 1 case of peritonitis, 1 case of tuberculosis of the urinary tract, 1 case of irido-cyclitis, and 3 cases of epididymitis. Most of these cases have been under our personal observation for considerable periods, up to five years, and have been selected for treatment as having shown little improvement under treatment with tuberculin B.E. (Koch).

Improvement has taken place in nearly all cases, and is, in our opinion, of an order which exceeds obviously that obtainable by any other form of treatment which is applicable to these conditions.

We have not observed any toxic effect following on the inoculations.

With regard to the effect of these antigens on other bacterial infections, we have treated 6 cases of streptococcal infection such as septicaemia, erysipelas, and osteomyelitis, 17 cases of staphylococcal infections, such as sycosis barbae, furunculosis, etc., and 5 cases of gonorrhoeal infection. Undoubtedly the course of the disease in many of these cases has been satisfactory as compared with previous experience with vaccine-treated cases. The issue, however, has not always been so straightforward, and therefore an opinion based on three weeks' experience must be more reserved.

In due course a detailed account of these cases will be published.

Professor Dreyer expressed his thanks to Mr. R. L. Vollum for his assistance in the preparation of antigens and the performance of the tests; to Dr. A. D. Gardner and Dr. H. K. Ward for their help in many experiments; to Captain S. R. Douglas, F.R.S., for help in many ways; and to Drs. A. C. Inman, P. Fildes, and G. T. Western for their willingness to apply the antigens in cases of human disease.

BIOCHEMISTRY AND CLINICAL MEDICINE.

Address by SIR WALTER FLETCHER
AT THE OPENING OF
THE NEW BIOCHEMICAL LABORATORY AT ST. THOMAS'S HOSPITAL.

THE new biochemical laboratory at St. Thomas's Hospital Medical School was formally opened on June 15th by the Marquess of Cambridge, in the absence of the Duke of Connaught, owing to the death of Princess Christian.

Sir JEREMIAH COLMAN, chairman of the Dunn Trustees, in formally presenting the laboratory to the Hospital, explained that the late Sir William Dunn, a very successful South African merchant who amassed a large fortune, appointed the directors of the Commercial Union Assurance Company to decide after his death how a large portion of his estate should be distributed. The trustees had endeavoured conscientiously to carry out the duties involved, but, naturally, they were aware of their limitations as business men, and on scientific questions they had sought authoritative help from outside. In this connexion they owed a great deal to Sir Walter Fletcher, for whom no amount of trouble had been too much. The moneys of the trust were now exhausted or earmarked, but he was able to announce—what came as a complete surprise to the beneficiaries—that along with the gift of the laboratory the trustees would ask the hospital to accept the sum of £5,000 to equip it with scientific instruments and to provide a certain amount for future use.

Sir Walter Fletcher's Address.

Sir WALTER FLETCHER said: I have been honoured by the request that I should give a brief account of the origin of the laboratories just visited and inaugurated, and speak of the share they are designed to take in the work of this great Hospital. In that well arranged new building we have just seen Professor MacLean and his colleagues engaged in all the high and delicate ritual of the biochemical laboratory, and within it you will have noticed some of the instruments of precision and the carefully ordered arrangements of glass apparatus which, with the help of the benefactors, the Dunn Trustees, have already been provided there. It is not easy for the onlooker, however, at once to see the relation of this work to the great charitable purposes of the Hospital or to appreciate the vital importance that chemical work of this kind has for the patients in the wards, and for their relief from pain and danger.

The physician in his healing art has constantly endeavoured to increase his powers of insight into the human body and its hidden machinery. For nearly two centuries and a half he has used the microscope to gain better powers of vision into the minute structure of the living body. For a hundred years he has used the stethoscope to improve his powers of hearing the sounds of disordered mechanism within the body. In the last generation science has made progress at a rate never known hitherto in the world's history, and has placed new weapons in the hands of the physician almost undreamed of before. In particular, the growth of biochemistry has already given him many new means of studying the body machinery—for the body is fundamentally a chemical machine—and has allowed him to trace some of the causes and results of disease at which hitherto he could only make guesses. The apparatus of a well equipped chemical laboratory has now become as essential to the daily work of the physician as the stethoscope in his pocket, or as his microscope and all the aids of bacteriology. Without chemical equipment the merciful daily work of the hospital cannot properly be done. Without it, moreover, we cannot hope to make progress and to improve our power of helping the sick.

Nowhere has this been shown more clearly than in the biochemical work which has already been done at St. Thomas's Hospital by Professor MacLean and his colleagues. I will give a very brief illustration of this. It was work done in the former laboratory which brought the British armies during the war the first clear light to guide the treatment and disposal of the many thousands of men who suffered from trench nephritis, the kidney disease which was one of the gravest causes of the loss of man-power during the campaign in France and Flanders. It was this work, again, which pointed clearly to the modes of prevention of that disease which were brought into successful practice before the close of the war. That great work was based upon biochemical observations made by Dr. MacLean with apparatus brought from this hospital and similar to that seen to-day. It never returned to the hospital, for his little biochemical laboratory at Etaples was eventually destroyed by a German bomb—but not before it had done its work. The same line of investigation pursued here since the last period of the war has brought other great benefits to the country. It led to the establishment of a just and scientific system by which the Ministry of Pensions is guided in dealing with the results of disease or inefficiency of the kidney. The Ministry of Pensions has been able to show that, owing to this scientific contribution from St. Thomas's Hospital, better justice has been done to the ex-soldiers, while economies have been effected amounting to hundreds of thousands of pounds. The country in this way alone has probably already saved in money more than it has spent in medical research work of all kinds.

Still another development of the same work more recently has notably increased the safety with which certain kinds of surgical operations can be performed, and the small death roll of the operating theatres here has been made smaller still.

Even at this moment the biochemical laboratory is engaged in the necessary chemical work without which the new treatment of diabetes by insulin could not be used. In every week, patients in these wards suffering from that disease have been brought from the miseries of starvation and pain to comfort and to new hope. What is being done by the help of insulin now in this hospital would have seemed miraculous only a year ago. It has to be seen to be believed, and when seen it stirs the heart and imagination of every thoughtful man. This merciful work, like all the rest of the modern healing art of the physician or surgeon, has been based upon, and depends at every point upon, experiments made with animals. No nobler service has been given to mankind by the animal kingdom than by those creatures whose lives have been used, not for the food or the clothing or the amusements of men, but for the diminution of pain and disease both in man and in other animals. These experiments, done by humane men under the careful safeguards maintained under statute by the Home Office, are necessary not only in research work but in the everyday charitable work of the hospital. The work of the biochemical laboratory, and now in particular the use of insulin for the treatment of the sufferer from diabetes, is hampered by an artificial regulation that animal experiments may be done in the Medical College but not in the Hospital, although they are done directly for the hospital and although the hospital cannot do its work without them. The distinction between the Medical College and the Hospital in this matter is a mere pretence. It should be recognized as an unworthy pretence incompatible with the intellectual honesty of this place. It dishonours, moreover, the service which the animals have rendered, and are rendering now, to the noble work of charity within these walls.

Progressive work like that for which the new biochemical laboratory is designed cannot be done by the physician who is answering the calls of a busy professional practice. Medical science, like every other branch of science, can only be advanced and can only be effectively and fully taught by those giving their whole energies to it. The Medical Research Council, which is charged by the Government with the duty of promoting medical research work throughout the country, found from the beginning of its work ten years ago that little or no progress in research was possible under the existing hospital arrangements, and near the close of the war they joined eagerly with the Ministry of Health in pressing for the establishment, at some at least of the chief hospitals, of what are now called University Clinics or professorial "Units." These were commended in eloquent terms by His Majesty the King a fortnight ago, when he spoke of the munificent gift which has come recently to the support of the units at another hospital from the Rockefeller

Foundation of New York. Without liberal money help from outside, these new centres of accurate study and higher teaching in medicine cannot do effective work. The Government grants made to them from public funds are barely adequate for the support of the men engaged. It is upon the hospitals that the burden of providing the laboratories and equipment has fallen, and this at a time when their funds are strained to meet the immediate requirements of the sick. The existing buildings of St. Thomas's Hospital were designed before the growth of science had made the need for laboratory work imperative for the proper help of the afflicted, and the necessary changes involved costly structural alterations. It is this which has made the recent benefaction of the Dunn Trustees so timely and valuable—though indeed the unavoidable structural work has necessarily absorbed much of the money needed for the heavy expenses of research apparatus and materials. The provision of this biochemical laboratory, however, by the foresight and generosity of the Dunn Trustees, together with similar aid they have given at two other great hospitals, is the first benefaction from any private British source which has been offered to meet and reinforce the munificent help already given to the medical unit system in London from America.

In tending the sick and suffering we can show no effective mercy without knowledge, and this knowledge can only be gained by the steady pursuit of truth. In the intimate association here between the wards and the laboratory we can truly say, in those ancient words, that here indeed

"Mercy and Truth are met together."

Official Thanks.

The CHAIRMAN (Sir Arthur Stanley), in gratefully accepting the gift, said that the further surprise donation of £5,000 for the purchase of scientific instruments would be most welcome. The maintenance of the Hospital was covered by subscriptions and interest on invested funds, but the constant difficulty hitherto had been to meet the demand for new laboratories and equipment consequent upon the progress of science. He added that research in general had no better advocate than Sir Walter Fletcher, and to him as well as to the Dunn Trustees the Hospital tendered its most sincere thanks.

Sir CUTHBERT WALLACE, Dean of the Medical School, expressed the great indebtedness of the school for the assistance received.

The MARQUESS OF CAMBRIDGE then distributed the prizes and certificates.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

NURSES' REGISTRATION ACT.

The Proposed New Regulation.

A DEBATE took place in the House of Commons on June 13th as to the proposed regulation by the General Nursing Council to settle how far nurses should be admitted to the Register without examination. Under the Act of 1919 the General Nursing Council has power to frame regulations, but these have to be laid on the tables of the two Houses of Parliament, and either House can present what is technically known as a prayer to His Majesty for change or rejection of such proposal. In the present instance the Nursing Council intended to deal with the matter by inserting after Rule 9 (1) (*f*) a fresh regulation prescribing that where a nurse was, on November 1st, 1919 (the date of the Act), engaged in actual practice and had also been bona fide engaged in nursing prior to January 1st, 1900, it should be open to the Council to accept, in each case, evidence of knowledge and experience for the purpose of registration.

Dr. Chapple moved to vary this by prescribing that a nurse who was in 1916 in practice should be eligible for registration subject to producing the following evidences of knowledge and experience:

"(*a*) A certificate of good character;

"(*b*) A certificate signed by a matron of a general hospital or an infirmary or by two medical men setting out that the applicant has been in attendance upon the sick in the capacity of a nurse for a period of not less than three years prior to the 1st November, 1919; and

"(*c*) A certificate signed by a registered nurse and by two medical men, one of whom shall be on the staff of a general hospital, setting out that the applicant has adequate knowledge and experience of medical and surgical nursing, and is competent to attend upon the sick in the capacity of a nurse.

"Provided that the Council may require the applicant, as a condition precedent to registration, to present herself for special inquiry before a medical officer, or officers, appointed by the Council."

In supporting this Dr. Chapple urged that every Act of this kind which had been passed had made provision for those practising bona fide at the time of the passage of the Act. Dr. Salter, seconding the motion, said he had no desire to lower the standard of nursing education. He did not mind how narrow the portal of entry was made for the future, but he pleaded for justice and fairness for highly qualified women who did not fulfil all the technical requirements of the Rule of the Nursing Council.

The Minister of Health (Mr. Neville Chamberlain), in the course of his speech, remarked that controversies of this kind almost invariably arose when an effort was made to stabilize a profession which hitherto had had no general standard; but there was a difference between the cases of the nurses they were now considering and the cases which had been previously dealt with, such as the midwives and the dentists. Under those provisions people could not practise their profession at all unless they came on the Register. That was not so under the Nurses Act; there was nothing in it to prevent a nurse from practising even if not on the Register. He did not deny that some hardship was inflicted upon certain nurses. But Dr. Chapple's motion—proposing that nurses who could obtain a certificate signed by a registered nurse and two medical men should have the right of entry upon the Register—appeared to him to go a great deal too far. That took away from the Nursing Council the discretion given to it under the Rule which he (the Minister) had approved. It must be remembered that about 27,000 nurses had already applied for entry upon the Register. They had done so on the understanding that the conditions were those laid down by the Nursing Council. If it had been suggested to them that it was possible to bring in a large number of other nurses with no hospital training he was not sure that they would have applied for registration. The facts of the situation had to be faced.

Dr. Fremantle explained why he differed from some professional colleagues who were supporting the motion before the House. Had he had anything to do with the framing of the Act of 1919 he would probably have shared their view; but neither he nor they had any part in drawing up that Act. It would have been better to include everybody up to the time of the passing of the Act and let them go on as bona fide members of the profession: all these persons would then have been brought within the discipline of the profession. But the ground was cut away by the decision of Parliament. True, Parliament laid down that rules should be made for the introduction of the bona fide nurse, but it said that the conditions she must fulfil were to be such as seemed satisfactory to the Nursing Council. The Council had said it would be satisfied with certain conditions for bona fide nurses as long as they practised before 1900, and it was believed that it would extend the date to 1910. For that reason he had put down an amendment standing in his name extending the date to 1910.

On a division Dr. Chapple's motion was carried by 101 votes to 81. Dr. Fremantle's amendment and another in the name of Major Barnett were held by the Speaker to have been disposed of by the decision.

Insurance Medical Service.

Mr. Chamberlain stated, on June 13th, in answer to Mr. Adamson, that he intended to propose the renewal of the National Health Insurance (Prolongation of Insurance) Act for the year 1924.

Lord E. Percy stated, in answer to Sir Kingsley Wood on June 14th, that the Government could not at this stage undertake that when a settlement had been reached with the doctors under the National Health Insurance scheme an opportunity would be given for the discussion of the agreement before it came into operation. But even if no express legislation was necessary, Parliament would have an early opportunity for reviewing the terms of the agreement next session on the Vote on Account.

Mr. Bruford, Dr. Watts, Mr. W. M. Adamson, Dr. Salter, and Mr. Leach addressed questions, on June 13th, to the Minister of Health regarding trade advertisements on the back of medical certificates required to be issued by doctors under the National Insurance Act, the point being made that the medical profession strongly objected to acting as advertisement distributing agents of any particular foods. Mr. Chamberlain said that he would consult the Stationery Office as to the possibility of securing other advertisements without loss to the revenue when the present contract terminated, if there should still be room for advertisements on the form. Dr. Salter asked whether the Minister appreciated the fact that a medical certificate issued by a doctor was a document of a very personal and intimate character, with the word "Confidential" across it, and whether, in these circumstances, any kind of advertisement on a document of that sort in the hands of a patient of the less educated class was taken as a personal recommendation from the doctor. Sir Henry Craik asked whether it was the case that the sum obtained at the Stationery Office for this advertisement on millions of forms was £135 a year. Mr. Chamberlain said that was so. He recognized that objections were taken and would try to have the matter altered as soon as the contract was ended. On another question by Commander Kenworthy, Sir William Joynson-Hicks said that the revenue from advertisements on the various medical certificates was estimated at £405 per annum (including £270 from Form Med. 40b). Commander Kenworthy remarked they had just been given a different figure, but Sir W. Joynson-Hicks replied that he believed the question was a different one.

Small-pox.

Sir W. Preston asked, on June 15th, how many cases of small-pox there had been in Gloucestershire in January, February, March, April, and May of this year; and whether any special steps had been taken to cope with the disease in the county.

Mr. Chamberlain replied that the number of cases of small-pox which had been notified in Gloucestershire, including the city of Gloucester, during these months had been as follows: January *nil*, February *nil*, March 8, April 25, and May 31. There was, however, evidence to show that many cases had occurred in the city of Gloucester during the last two months which had not been recognized as small-pox by the medical officer of health and had not been notified. Special visits had been paid by medical officers of the Ministry of Health to the districts in which the disease had occurred, in order to assist and advise the local authorities and their officers. In the case of Gloucester, two of these medical officers had, at the request of the local authority, assisted in the diagnosis of cases and in the organization of suitable measures to meet the emergency, and these officers discovered a number of cases which had been incorrectly diagnosed or overlooked. He had since caused a communication to be sent to the local authority recommending the several special steps which should be taken to deal with the outbreak, and he understood that effect was being given to these recommendations. In reply to a further question Mr. Chamberlain said that no official employed by the Gloucester medical officer to distemper houses where small-pox had occurred had himself contracted the disease.

Mr. Rhys Davies asked, on June 15th, whether, when the recruiting regulations requiring intending recruits to promise to be vaccinated was reintroduced in January, 1919, the War Office possessed information as to small-pox in the army; and, if so, why repeated requests for such information had been refused. Lieut.-Colonel Guinness said that the complete statistics which had been asked for from time to time were not then and were not yet available, but the Department possessed sufficient information to be satisfied that the reintroduction of the regulation was desirable from a military point of view.

Mr. Lee asked, on June 13th, whether the Minister of Health had seen an expression of opinion by the medical officer of health for Chesterfield that the outbreak of disease in Clowne, Bolsover, Ilkeston, and other places in Derbyshire, which had been notified as one of small-pox, was not due to that complaint, seeing that its effect had none of the usual characteristics of face disfigurement and that no deaths had occurred. Mr. Chamberlain assumed that the reference was to certain statements in the annual report of the medical officer of health for Chesterfield for the year 1922; but in that report the medical officer acknowledged that his view was shared by only a very small minority. When similar statements were made last year an expert committee was appointed by the then Minister of Health to examine certain patients in Chesterfield and elsewhere who had been notified as suffering from small-pox. This committee arrived at the conclusion that the disease was, in fact, small-pox of a mild type, a conclusion supported by subsequent investigation undertaken by medical officers of the Ministry.

Mr. Chamberlain has supplied the following information as to the number of cases of, and deaths from, small-pox in Japan during the years 1915-20:

	Cases.	Deaths.		Cases.	Deaths.
1915	17	3	1918	1,469	285
1916	256	48	1919	4,056	1,115
1917	5,122	1,153	1920	3,167	844

The notification of small-pox is compulsory in Japan when the disease is prevalent or threatens to prevail, and hospital isolation is practised if deemed necessary.

"Patent Medicine" Duties.—In committee on the Finance Bill, on June 12th, Mr. Neil McLean urged either that the Patent Medicine Duties should be repealed or that the addition imposed in 1915 should be taken off. The amount realized by the tax for Great Britain in 1914, before the imposition of the additional duty, was £360,377. In 1921-22 the net receipts from the duty were £1,328,448, and the figures of the current year were, he understood, about the same. Evidently there had been no greater consumption during the year, but since these articles were largely bought by people who imagined themselves to be unwell, and who were sometimes deluded by fanciful, alluring advertisements, he did not think that the Government, if it reduced the tax, would suffer a great loss of revenue. Mr. T. Williams also objected to the tax, and suggested that as drugs were now costing so much more than they did previous to the war doctors were not using them as they would have done if prices had remained normal. Sir W. Joynson-Hicks explained that this was not a tax upon medicine imported into the country, nor on medicines used in hospitals or prescribed by doctors, but on what everybody knew as "patent medicines." Although the tax had been doubled, the consumption had not in any way been reduced. Mr. Short spoke against the duty, but on a division the Clause was approved by 231 votes to 119.

Opium Traffic.—The Home Secretary informed Sir Walter de Frece, on June 12th, that the main results of the meeting of the Advisory Committee on the opium traffic at Geneva were (1) that an agreement was reached with the delegation from the United States which would, it was hoped, have the effect of securing the co-operation of that Government with the States which were members of the League in giving full effect to the International Convention of 1912, and (2) that the Advisory Committee decided to make a recommendation for the adoption by agreement between the Powers interested of measures for securing a more effective application of Part 2 of the Convention which related to the suppression of the use of opium for smoking and a limitation of the manufacture of morphine, heroin, and cocaine, and of the production for export of the raw material from which the drugs were made.

Assisted Milk Supply.—Having ascertained, on June 13th, from Mr. Chamberlain, that the form of application for assisted milk supply used by the Hertfordshire County Council was in use by other authorities with the consent of the Ministry of Health, Mr. Rhys Davies put a lengthy question as to the character of this form. He conveyed that under it applicants were required to supply birth certificates in respect of children under 3 years of age for whom assistance was asked; that the application had to be accompanied by a medical certificate stating that, by reason of ill health, the applicant was in need of extra milk; and that a number of inquisitorial questions were included. Mr. Davies put it that the amount of milk supplied to mothers and babies in the Letchworth area had fallen from 6,660 pints for mothers and 5,901 pints for children in 1920 to 112 pints for mothers and 280 pints for children in 1922, and that this reduction had been accompanied by an increase in infant mortality from 43 per 1,000 in 1920 to 63 per 1,000 in 1922. The Minister of Health replied that one of the medical officers had been instructed to investigate the matter. Before taking any action it was necessary to ascertain whether the increased rate was really the result of the reduction in the milk supply.

Lead Poisoning.—Mr. A. Greenwood asked, on June 14th, whether the Home Secretary was aware that of the eight cases of lead poisoning among house painters and plumbers which came to the knowledge of the Home Office during April six were fatal; and whether the Minister would urge on the Government the importance of ratifying the White Lead Convention as recommended by the Norman Committee. Mr. Bridgeman said that the question was being carefully considered. On request he gave particulars as to the four workers in the china and earthenware industry reported in the May issue as stricken by lead poisoning:

Case 1.—Man, aged 51, glost placer, employed forty years (ten years in the dipping-house as a child and youth). Chronic lead poisoning—arterio-sclerosis.

Case 2.—Man, aged 62, dipper, employed thirty-three years. Chronic lead poisoning—nephritis.

Case 3.—Woman, aged 39, dipper, employed twenty years. Chronic lead poisoning—nephritis.

Case 4.—Woman, aged 32, aerographer, employed sixteen years. Chronic lead poisoning—nephritis.

The Fire at Highbury Pensioners Hospital.—Major Tryon, on June 14th, gave particulars of the distressing fatalities which had occurred through an outbreak of fire at the Ministry of Pensions Hospital, Highbury, Birmingham. The building was not owned by the Ministry, but was made available for its exclusive use by special arrangement with the Birmingham Pensions Committee, which was responsible for the administration. The fire began in an isolated open-air ward in the afternoon. It was at once observed by the orderly on duty, who attempted to deal with it and gave the alarm. The fire brigade arrived in five minutes. In the meantime the whole of the staff, and all patients who were fit to do so, endeavoured to put out the flames and to remove helpless patients. A gale of wind was, however, blowing at the time and the fire spread rapidly. The ward was an open-air hut of the most modern type. It was a wooden construction on a brick foundation with a galvanized iron roof. There were two exits, but that at the end where the fire started at once became inaccessible; the other had an opening of 9 feet wide through which two beds could be simultaneously removed. In the ward were nine full waterbuckets and two fire extinguishers. The number of patients there were fifteen, of whom only three could help themselves. Two lost their lives and two were seriously injured. Major Tryon expressed his sorrow at what had happened and promised full inquiry into all the circumstances, including the suitability of this type of building. He agreed with Mr. Macpherson that the hospital was regarded by medical experts as one of the most up-to-date in the world.

Tuberculosis in Cattle.—Mr. Adams asked, on June 18th, whether the Minister of Agriculture would reintroduce the Tuberculosis Order of 1914 or one similar whereby tuberculosis in cattle would be made a notifiable disease, and whether he would promote a bill to require all county authorities and the larger cities or combinations of smaller authorities to appoint whole-time veterinary officers for the inspection of cattle, particularly dairy herds, and the inspection of meat. Sir Robert Sanders said that unless and until he was assured that a majority of local authorities, including counties and cities, favoured the reintroduction of the Order of 1914, he did not see his way to reissue it in view of the expenditure involved. Section 1 of the Milk and Dairies (Amendment) Act, 1922, deferred until September 1st, 1925, the operation of Section 10 of the Milk and Dairies (Consolidation) Act, 1915, which contemplated appointment of veterinary inspectors by local authorities for purposes such as were suggested in the question.

Infectious Diseases Notification.—Mr. Scrimgeour asked, on June 18th, whether the Scottish Board of Health would direct medical officers of health to record in their annual report the number of cases of small-pox and other infectious diseases notified from families living in houses or tenements containing one, two, or three rooms, and from houses containing four or more rooms. Dr. Elliot said that the Board was prepared to consult local authorities and their medical officers of health through their associations on this point, but not without such consultations to issue a direction.

Medical Appointments.—Mr. Becker asked, on June 13th, whether the attention of the Minister of Health had been called to the complaint of English medical men in that Wales, Scotland, and Ireland insisted upon having only men of their own nationality in their region, whereas in England many of the more lucrative appointments were held by other than Englishmen; and whether he would see that all doctors appointed by the Minister of Health for England should be Eng ish. Mr. Chamberlain replied that no general complaint of the kind named had reached the Ministry.

Dangerous Drugs.—Mr. Bridgeman stated, on June 13th, in answer to Captain Hay, that the number of factories licensed at the present time for the manufacture of morphine and heroin was two. The amount of morphine made in 1922 was 315,342 ounces, of which, however, 173,010 ounces were converted into codeine or heroin, leaving a net total of 142,332 ounces. The amount exported was 115,465 ounces. The amount of heroin made in 1922 was 31,673 ounces and the amount exported 25,911 ounces.

Spahlinger Treatment for Tuberculosis.—Mr. Chamberlain stated, on June 13th, in answer to Captain Reid, that owing to supplies of the complete serum and vaccine not being available, the opportunity for a trial of this method of treatment in this country had not yet arisen. He regretted it was so.

Vivisection Inspectorate.—Mr. Bridgeman, on June 14th, corrected an assertion by Colonel Sir Charles Burn that, following on the recommendation of the Royal Commission on Vivisection, four whole-time inspectors were appointed for Great Britain. The staff was increased to four, but of these only two were whole-time officers. The working of the present arrangement would be carefully watched, but in view of the financial situation he could not hold out any prospects of an increase in the inspectorate.

Cannock Chase Hospital.—Major Tryon informed Mr. W. M. Adamson, on June 14th, that owing to the decreasing requirements for hospital accommodation in the Midlands arrangements had been made for the gradual closing of the Pensions Hospital at Cannock Chase.

Answers in Brief.

The Mental Treatment Bill was read a third time in the House of Lords on June 19th, and will now go to the Commons.

Mr. Chamberlain states that the report of the Committee of Inquiry on Venereal Disease is under consideration, but he is unable as yet to state what action will be taken on the recommendations. On a further question he said he was advised that there was nothing in the existing law to prevent chemists from selling disinfectants for the purpose of the prevention of any venereal disease so long as they were not sold accompanied by any written or printed recommendations.

Sir W. Joynson-Hicks has promised on behalf of the Treasury that a deputation shall be received at an early date to discuss the possibility of exempting hospitals from legacy and succession duty.

England and Wales.

Opening of the New Birmingham Pathological Laboratories at Hollymoor.

On June 16th the Minister of Health, in the presence of a representative gathering, inspected the new pathological laboratories established at Hollymoor Mental Hospital, near Birmingham, by the Joint Board of Research for Mental Disease. The laboratories consist of three large rooms in series, with small annexes, and an *x*-ray room. The rooms are well suited to the purpose and are equipped for all forms of pathological investigation. The equipment will be made more complete as funds permit, and, as in all probability the first research work performed in the laboratory will be on basal metabolism, a chamber for the purpose will shortly be erected. In addition to pure research, the laboratory will undertake the examination of specimens from any of the mental hospitals. The work is under the direction of Sir F. W. Mott, assisted by Dr. F. A. Pickworth.

After inspecting the laboratories, the company assembled in the Recreation Hall. Sir Gilbert Barling (chairman of the Joint Board of Research for Mental Disease) welcomed the Minister of Health, and explained that the Joint Board consists at present of an equal number of representatives of the University of Birmingham and the City Asylums Committee. The funds are provided largely by voluntary contributions, the mental authorities being prevented by existing regulations from contributing to any appreciable extent to the heavy expenditure. In this connexion he paid warm tribute to the generosity of the Feaney Trustees, and expressed the hope that new legislation would soon remove the present restrictions from mental authorities. In outlining the aims and objects of the Board, he said that the ideas before them were to stimulate research into mental diseases, and to secure for the patients in mental hospitals equal clinical advantages with those in the large voluntary hospitals.

Sir Frederick Mott recalled the fact that Mr. Joseph Chamberlain, when Colonial Secretary, founded the schools of tropical medicine, and trusted that the Minister of Health would take the same keen and practical interest in medical science. One of the considerations which determined the speaker's decision to undertake the directorship was the association of the scheme with the University. This ensured breadth of outlook and all the advantages of freedom of discussion with other faculties. He would aim at stimulating the young men to study mental disease on a scientific pathological basis, and instanced the improvement in the standard of mental work which followed the institution, at his instigation, of the Diploma in Psychological Medicine by the University of Cambridge. Research meant time, patience, and criticism, and he hoped that it would not be hampered by too much routine work, which had a stultifying effect on research.

Dr. Hubert Bond (Commissioner of the Board of Control) welcomed the scheme, and said that it commended itself to his colleagues because of its personnel, the atmosphere of progress it created, and its association with the University. He expressed gratification at the presence of Mr. Neville Chamberlain, who, he said, by placing upon the proceedings his imprimatur, was helping to bring psychological medicine "within the fold."

Mr. Neville Chamberlain said that the duties of the Minister of Health were very varied: watching the activities of building rings, securing a pure milk supply, and so on; but he had come to the conclusion that that part of his work which was concerned with mental hospitals was by no means the most dangerous. The scheme marked the inauguration of a new form of co-operation which he warmly approved. He recalled Mr. Joseph Chamberlain's interest in scientific research, a tradition to which he said he intended to adhere. Mental affliction was now regarded not as a thing apart, but as one phase of disease, and this was a step in a rational attempt to find its causes. No one knew when their patient building would be rewarded by a great discovery. The joint action of the University and the Mental Hospitals Committee had opened the door to a real advance, and he congratulated them and Sir Frederick Mott, to whom he paid tribute. In conclusion he expressed his high confidence in the future of the work.

The Lord Mayor of Birmingham proposed a vote of thanks to Mr. Chamberlain. This was seconded by Councillor Miss Bartleet (chairman of the Asylums Committee), to whose activity the scheme owes so much. She called attention to the great help rendered by Sir Gilbert Barling, who had secured the co-operation of the University and hence the services of Sir Frederick Mott. The vote was carried with acclamation, and the proceedings terminated.

The laboratories are not yet in full working order, and are regarded by those responsible as only a beginning. It is hoped that eventually they will be moved to the University and be closely associated with its general pathological work. No general appeal is being made for funds, but many have given voluntary financial help. Sir Charles Hyde has made the munificent offer to the Joint Board of £250 a year for three years, the gift being made after the close of the meeting.

Small-pox in Gloucester.

As reported in our parliamentary notes (p. 1069) the Minister of Health has made a serious announcement as to small-pox in the city and county of Gloucester. The notifications in March were 8, in April 25, and in May 31. But that is not all. There is, he stated, evidence to show that many cases have occurred in the city during the past two months which have not been recognized as small-pox by the medical officer of health and have not been notified. Special visits were made by medical officers of the Ministry, who discovered a number of cases which had been incorrectly diagnosed or overlooked, and the officers have, at the request of the local authority, assisted in diagnosis and in organization of suitable measures to meet the emergency. From the *Bristol Times* of June 7th we learn that the steps taken include the provision of increased hospital accommodation by utilizing capacious premises at Beechley, Chepstow, which had been in use for German prisoners of war. The Ministry has succeeded in obtaining agreement to this provision between various local authorities in West Gloucestershire. In addition to the county town, Westbury and Lydney, on the fringe of the Dean Forest coalfield, are mentioned, and the agreement includes Coleford Urban and Westdean Rural districts. Owing to the serious outlook in the city of Gloucester, cases are to be received from it at Beechley.

The latest official figures issued by the Registrar-General are for the week ending June 9th, and they record 35 notifications in the county, 26 of the 35 being in the city. We understand that Dr. W. H. Davison, Assistant Medical Officer of Health for Birmingham, has been given plenary powers by the Corporation of Gloucester to take charge of the epidemic and to control the staff for dealing with it. Meantime, as reported in the *Birmingham Post* of June 13th, twenty-seven practitioners of the city have met, and have published the following conclusions, with their signatures appended:

"That we, the undersigned medical men practising in Gloucester, are aware that a large number of cases of small-pox exist in the city. We urge the citizens to support the Health Authorities in their efforts to stamp out the outbreak, and we strongly advise that everybody, in his own interest and for the public welfare, be vaccinated or revaccinated."

From the *Birmingham Post* we learn that one practitioner, however, a well known antivaccinationist, has inserted in a local newspaper an advertisement containing the following:

"This city has been visited by two medical men from the Ministry of Health and one medical man from the Metropolitan Asylums Board. They have called upon a large number of persons who have been suffering from eruptions and, with one exception, they have declared the whole of these cases to be small-pox. The one exception was a child suffering from chicken-pox who occupied the same bedroom as the alleged case of small-pox. I saw them both. The supposed small-pox case was one of the mildest cases of chicken-pox I have ever seen. And yet your Health Committee squandered 50 guineas to fetch a man down from London to make that erroneous diagnosis. I have notified a large number of chicken-pox cases of my own, and I have seen other cases in company with medical colleagues, and I have no hesitation whatever in saying that these gentlemen from the Ministry of Health are entirely wrong in their conclusions. There have been a few cases of small-pox, but very, very few; some have been my own, but at the present time, judging from inquiries I have made, I do not believe there is a single case of small-pox in the city."

The Public Vaccinator, when interviewed on behalf of the *Birmingham Post*, stated that for some days people had been vaccinated at the rate of 300 to 400 a day, but lately there had been a falling off to 100 a day, a decline which he attributed to advertisements in the press.

Such, it appears, is the present position. As elsewhere in England the variola in Gloucestershire is of a mild type, and we have not heard of any fatal cases, though some severe attacks with serious complications or sequelae have been mentioned. Like mild infectious diseases of every sort, this strain of small-pox is more readily overlooked than the classical form of the malady, and there is on that account need for constant vigilance on the part of all concerned in the prevention of epidemic spread. Where diagnosis is difficult, there is all the more occasion to resort to the one measure, recent successful vaccination and revaccination, which, applied in circumstances like the present, can render diagnosis of less importance, by making the occurrence of small-pox an impossibility. Nowadays vaccination is largely a matter of individual option and every parent must take the responsibility of deciding for himself whether to protect his children or to leave them susceptible to attack. If he is wise he will protect them; if foolish, then his children will have to suffer for his folly.

LIVERPOOL ROYAL SOUTHERN HOSPITAL.

At the annual meeting of the Liverpool Royal Southern Hospital, on May 3rd, it was stated that the debt of the hospital to the bank had been reduced from £13,880 to £9,448, but the future of this institution was not free from anxiety, in spite of the extraordinary income from legacies that had come to the hospital in the past year. The contributions, for the first time, by the approved societies amounted to over £800. The treasurer suggested that the insurance companies might follow the good example of the approved societies, for they benefited directly or indirectly by the work of the hospitals. The new scheme of the Liverpool Local Voluntary Hospitals Committee, whereby the various trade societies would make a voluntary weekly contribution, was warmly welcomed. This plan, jointly with the efforts of the Hospital Saturday and Sunday Fund, should place the voluntary hospitals of the city on a sound financial basis and relieve the committees of their perennial anxiety to meet expenditure. The need for a larger and better equipped electro-therapeutic and massage department has been recognized by the committee, and it is hoped that its construction and equipment, costing approximately £3,000, will be completed before the end of the year. In connexion with the lady almoner's department, a number of ladies have volunteered their services in alleviating the personal conditions of patients and their after-care, and an appeal was made for the establishment of an endowment fund, the interest from which could be used to provide relief immediately in necessitous cases.

Scotland.

INTERNATIONAL PHYSIOLOGICAL CONGRESS.

THE eleventh International Physiological Congress, which, as already announced, is to be held at Edinburgh on July 23rd to 27th, under the presidency of Professor Sir Edward Sharpey Schafer, F.R.S., will meet in three sections—general, chemical, and pharmacological—but on the opening day Professor J. J. R. Macleod, F.R.S., will deliver an address on insulin. Those desiring to enrol as members should apply and send the subscription (25s.) to the Assistant Secretary of the Congress, Department of Physiology, the University, Edinburgh.

THE ADVANCE OF SURGERY.

An address on surgery, old and new, was given last week by Sir Montagu Cotterill, C.M.G., to the members of the Edinburgh Rotary Club. The lecturer stated that when he began medical study in 1869 at a hospital in the South of England, about one-third of those upon whom operations were performed died from the effects of the operation—and no wonder, considering the conditions that existed before the work of Pasteur and Lister. During the war, at Craigleith Hospital, he had operated on 1,538 soldiers, with only one death—a sufficient indication of the changes that had taken place in the intervening years.

PUERPERAL MORBIDITY AND MORTALITY.

Last week (p. 1036) we announced the composition of the Departmental Committee appointed by the Scottish Board of Health to inquire into the incidence of puerperal morbidity and mortality, with special reference to its causes and possible remedies. The committee has begun its sittings and will welcome offers of evidence from medical practitioners; such evidence, we are asked to state, would be of special value where records have been kept over a period of years. Communications should be addressed in the first place to the secretary of the committee, Mr. C. L. Farmer, Scottish Board of Health, Edinburgh.

Ireland.

VITAL STATISTICS OF NORTHERN IRELAND.

DURING the quarter ending March 31st, 7,381 births were registered in Northern Ireland, this number being equivalent to a birth rate of 23 per 1,000 of the estimated population. The births registered comprised 3,777 boys and 3,604 girls. This rate was 0.8 below the rate for the corresponding quarter of 1922, and 0.1 below the average rate of the first quarters of the previous ten years. Illegitimate births numbered 311, being 4.2 per cent. of the total births registered during the quarter. The deaths registered during the same quarter numbered 5,112, representing an annual death rate of 16 per 1,000. Of the deaths registered, 2,472 were of males, 2,640 of females. This rate was 4.0 below the rate for the corresponding quarter of 1922, and 5.0 below the average rate for the first quarter of the previous ten years. Of the 5,112 deaths registered, 629, or 12.3 per cent., were of infants aged under one year; and 2,078, or 40.6 per cent., were of persons aged 65 years and upwards. There were 123 inquests reported to the registrars during the quarter, and 639 deaths (or 12.5 per cent. of the total deaths registered) were uncertified, there having been no medical attendant during the last illness. The urban mortality from

the principal epidemic diseases recorded during the quarter was equivalent to an annual rate of 0.9 per 1,000 of the population, the total rate from these diseases for the remainder of Northern Ireland being 0.3 per 1,000. In Belfast the mortality from the principal epidemic diseases was 0.8 per 1,000; of the 1,556 persons whose deaths were registered for Belfast during the quarter, 301 were of infants under one year, representing a mortality of 113.3 per 1,000 births registered; and of the deaths recorded for Belfast, 418, or 26.9 per cent., occurred in public institutions. The population of Northern Ireland in the middle of 1922 was estimated to be 1,282,000, inclusive of military. During the same period the births registered in England and Wales numbered 192,970, or 20.5 per 1,000, and the deaths numbered 124,720, or 13.3 per 1,000. The number of marriages registered in Northern Ireland during the last quarter of 1922 was 2,063, representing an annual rate of 6.4 per 1,000 of the estimated population. This rate was 0.6 above the rate for the corresponding quarter of 1921, and 0.2 below the average rate for the previous ten years. Of the total number of marriages, 548 were marriages of Roman Catholics and 1,515 related to persons belonging to all other denominations.

Report of International Red Cross on Irish Internment Camps.

On June 2nd, in this column (p. 954), we published under this heading a communication from the International Red Cross Committee at Geneva with regard to internment camps in the Irish Free State. In reference to this matter we have received the following letter:

Sir,—I have read with surprise the report of the International Red Cross on Irish internment camps appearing in your issue of June 2nd (p. 954), having been one of the delegates sent by the Prisoners' Defence League to Geneva last November to lay a statement before the International Red Cross Committee on treatment of political prisoners in Free State prisons. There was no mention made in that statement of internment camps, where, in some cases, conditions are on the whole good.

The International Red Cross promised to send a Commission and to get into touch with the President of the Prisoners' Defence League, Mrs. Despard, immediately on their arrival in Ireland. After six months' delay, so far as I know, two members of the International Red Cross came to Dublin. They made no attempt to get in touch with Mrs. Despard—I only by chance learned that they had arrived and with two others succeeded in having one interview with them, during which the word "internment camp" was never mentioned. We told of more recent conditions in Maryborough, Mountjoy and Kilmainham. To my certain knowledge the Commission never visited Kilmainham or Mountjoy, nor as far as I know Maryborough.

There is abundant evidence that the representations of the Prisoners' Defence League are only too well founded, much of it in the form of sworn statements by prisoners. In this connection the statement of the Hon. Albina Brodrick in the *British Journal of Nursing*, May 26th, is interesting. There are also statements from Dr. Elsie Murphy, Miss Dorothy McArdle, B.A., of Alexandra College, Dublin, and many others.

These conditions prevailed while the International Red Cross delegates were in the city of Dublin, and if they had investigated those places of which definite complaints had been made, it would have been impossible to issue with truth such a report as has been issued by them.—Truly yours,

KATHLEEN LYNN, F.R.C.S.I.

New South Wales.

[FROM OUR CORRESPONDENT.]

Diploma of Psychiatry.

On the recommendation of the Faculty of Medicine in the University of Sydney the Senate has decided to establish a Diploma in Psychiatry. A candidate must produce evidence (1) that he is a qualified practitioner registered by the New South Wales Medical Board; (2) that a period of not less than twelve months has elapsed since he obtained a registrable qualification in medicine, surgery, and obstetrics; (3) that after obtaining the registrable qualification he has been resident medical officer for six months in a mental hospital approved by the Senate, or has been in regular attendance at the rate of not less than six hours a week during term time in the wards of any similarly approved hospital devoted to the care and treatment of functional nervous and mental diseases for a period of not less than twelve months; (4) that after obtaining the registrable qualification he has attended the following courses of lectures and demonstrations:

(*a*) Psychology, thirty-five hours; (*b*) Anatomy and physiology of the nervous system, thirty hours; (*c*) Neurology, twenty hours; (*d*) Pathology of the nervous system, including lectures and demonstrations, with special reference to microscopic anatomy, biochemical methods and the chemical examination and estimation of certain clinical symptoms; (*e*) Psychiatry, to include ten systematic lectures in advanced psychiatry and in addition five lectures in mental deficiency and ten clinical demonstrations in the wards of a mental hospital or psychiatric clinic, provided that candidates must have previously attended the courses of lectures in psychiatry delivered to medical students in the sixth year of the curriculum or an equivalent of such course. Candidates are required to pass written, clinical, and *viva voce* examinations in psychiatry and neurology, a written and a practical examination in psychology and in the anatomy and physiology of the nervous system, and a practical examination in pathology. The courses of instruction are to be given during two terms of each year as required.

Candidates who are unable to attend all the lectures and demonstrations in these two terms may take the remainder in subsequent terms, but all the courses must be completed and the candidate must present himself for examination within a period of six terms.

Insanity in New South Wales.

The annual report of the Inspector-General of the Insane for the year ended June 30th, 1922, shows that there were 7,997 insane persons under official cognizance during the year. This was an increase of 55 over the number for the preceding year; the proportion of insane to the general population is 1 in 267. The number of admissions was 1,477; of these, 1,236 were admitted for the first time. Natives of New South Wales formed 53.42 per cent. of the admissions. The number of persons recovered was 614, equal to a rate of 41.57 per cent. on the admissions and readmissions for the year. The number of those discharged improved was 167, a proportion to the admissions of 11.43 per cent. The recovery rate shows an increase of 3.93 per cent. compared with the recovery rate for the year 1920-21, and an increase of 2.02 per cent. on the average for the past ten years. Of the 606 deaths, 77 were due to general paralysis, 40 to inflammation and other diseases of the brain, 37 to epilepsy and convulsions, 34 to maniacal and melancholic exhaustion, and 26 to apoplexy and paralysis. Diseases of the heart and blood vessels caused 94 deaths, pulmonary tuberculosis 45, other diseases of the lung 50, decay and old age 36.

The Inspector-General again emphasizes the necessity for some amendment of the present Lunacy Act, inasmuch as this Act only contemplates the treatment in the mental hospitals of persons who are certifiable as insane, and no specific provision is made for persons in the incipient stages. An amending bill is now before the Minister which provides for the recognition of three classes of persons suffering from mental disorder according to the degree of restraint required for their care:

(*a*) Persons amenable to treatment, power of detention not being required as a necessary condition of their admission; such cases to be dealt with in the ordinary wards of a general hospital or in a special hospital. (*b*) Persons for whom detention is in their own interest. These would be treated in a special hospital. (*c*) Persons who from the nature of their complaint require compulsory detention, either for their own protection or for that of the public; they will continue to be provided for in the ordinary mental hospitals. Persons suffering from mental disorder to be admitted to a public hospital or special hospital are defined as those whose mental condition is not such as to render it necessary to grant a certificate of insanity in their case, either for their own protection or that of the public; those admitted to the special hospital will be admitted on their own request.

A special hospital of the nature to take patients of both classes—the Psychiatric Clinic at Broughton Hall—has been established, and is now admitting patients who voluntarily seek the assistance of the department. It is in charge of Dr. Evan Jones, who has associated with him as a consultant Sir John Macpherson, M.D., F.R.C.P.Edin., lately Commissioner in Lunacy for Scotland, and now Professor of Psychiatry in the University of Sydney. As psychiatry is a compulsory subject in the medical curriculum at the University of Sydney, this clinic will be of great value in the training of medical students.

Mental Defectives in New South Wales.

Under the auspices of the Public Health Association of Australia a meeting was recently held to discuss the problem of the mental defective. Sir John Macpherson, Professor of Psychiatry in the University of Sydney, referred to the

system in vogue in Scotland of boarding out the mental defectives, who partook to a certain extent in the communal life of their respective parishes. Under this system they are far happier than they would be in institutions, and he urged that the institutions should be made, as far as possible, to embody the domestic idea. Dr. Eric Sinclair, the Inspector-General of the Insane in New South Wales, said there must be numbers of mentally defective persons in this State whose training was neglected, over whom no sufficient control was exercised, and whose wayward and irresponsible lives were productive of crime and much misery to themselves and their relatives. Only when these unfortunates committed some crime was attention directed to them, and such persons committed to prison repeatedly for crime not due to inherent vice but to a permanently defective mind, could not be improved by punitive sentences. This condition of things could only be ameliorated by devising some means of training them in discipline and in simple occupations. Such training could not be done at home, but the education authorities were in the best position for finding out these defectives and providing efficient means for their training and education. Dr. Ralph Noble advocated the establishment of such out-patient clinics as were to be found in New York and in Massachusetts as the most effective means to be used in the fight against feeble-mindedness in the community.

THE MATERNITY BONUS.

At a recent meeting of the National Council of Women a report on the maternity allowance was presented by two ladies who were members of the commission appointed to inquire into the working of the maternity allowance in New South Wales. They stated that the allowance is claimed by 98 per cent. of mothers, but unnecessary deaths continue to occur. In New South Wales statistics do not show that the money disbursed in the maternity bonus has had the slightest effect in minimizing maternal or infantile mortality. Dr. J. C. Windeyer, Lecturer in Obstetrics in the University of Sydney, gives the following as average conditions: "From 12 to 15 per cent. of pregnancies end in abortion; from 3 to 5 per cent. of women are delivered of stillborn children. At least 50 per cent. of stillbirths are preventable. First-year deaths represent 7 per cent. of births registered. . . . Neo-natal deaths are largely preventable." Between 1912 and 1922 the Federal Government has distributed some six and a half million pounds among 1,300,000 mothers. The report gave examples of other systems of assistance in operation in Europe and America, where it had been found that measures which provided for instruction in the hygiene of maternity and infancy through public health nurses, consultation centres, and other suitable methods were of much greater benefit to both the mothers and the State than the system of giving a maternity bonus, and some recommendations based on this information were made to the Council. These will be considered at a future meeting.

Correspondence.

TOXIC SYMPTOMS FOLLOWING THE ALKALINE TREATMENT OF PEPTIC ULCER.

SIR,—In view of the fact that I have for several years been a strenuous advocate of the medical treatment of gastric and duodenal ulcer in preference to surgery, I think it only right to draw attention to the possibility of toxic symptoms arising as a result of using very large doses of alkalis.

Sippy, who was the first to recommend this treatment with the object of completely neutralizing the acid of the gastric juice, has not referred in any of his papers on the subject to the toxic symptoms which may result. In a recent paper from the Mayo Clinic Hardt and Rivers[1] describe the toxic symptoms which may develop in cases in which it is impossible to neutralize the acid completely. The patient is at first unduly introspective and nervous. He then complains of difficulty in taking his milk. After a time headache, nausea, and vomiting occur. The patient becomes apathetic and drowsy, and in one of their cases death ensued. In every instance the urea in the blood became greatly increased, and albumin and casts appeared in the urine. In some there was evidence of kidney disease before the symptoms developed, and in the fatal case definite chronic nephritis was found.

I have met with three similar cases in private patients, though none in hospital, during the last three years. In one case the patient had only one kidney and this was affected with pyelitis. In the other two patients a moderate degree of pyloric obstruction was present and there was an extreme degree of hypersecretion. In one of these death occurred in spite of the early cessation of the alkaline treatment. The urea content of the blood was greatly increased in all three cases.

It is impossible at present to say what is the cause of the toxic manifestations. But it seems clear that no case in which the kidneys are diseased should be subjected to the full alkaline treatment, and the same is true when partial pyloric obstruction is present in spite of Sippy's advocacy of the treatment in such cases. If any suspicious symptoms develop, a blood-urea estimation should be made and the treatment discontinued until it is ascertained whether it is excessive; in that case the treatment should be modified.

For ulcers associated with renal disease treatment by diet, olive oil, and belladonna in the manner I have described, with only small doses of alkalis, may give sufficiently good results, but if pyloric obstruction is present, even in a mild degree, it is probably wise to recommend gastro-enterostomy without further delay.—I am, etc.,

New Lodge Clinic, Windsor Forest, June 17th. ARTHUR F. HURST.

[1] L. L. Hardt and A. B. Rivers, *Arch. Int. Med.*, xxxi, 171, 1923.

THE PREVENTION OF HEART DISEASE.

SIR,—In the JOURNAL for June 2nd Dr. Poynton and Dr. Moon point out the desirability of providing homes for the convalescence of cardiac cases, and say that as far as they are aware no such places are in existence in England.

I would like to call attention to the fact that, under the auspices of the Invalid Children's Aid Association, a home for patients convalescent from rheumatic affections of the heart who need prolonged rest and care under medical supervision was established three years ago at 14, Stonebridge Park, N.W. (the Edgar Lee Home). Twenty-four boys under 15 are taken, and since the home was opened 203 boys have passed through our hands with results which may be said to justify the experiment, in view of the improvement in their condition. An experienced matron and nurses are in residence; weekly visits are paid by myself, and Sir John Broadbent and Dr. Cotton act as honorary consultants. There is a large garden attached to the home where patients can sit out or take suitable exercise. An important feature is the provision of educational facilities. A certificated teacher approved by the Board of Education attends daily, and classes are held in a roomy and well ventilated schoolroom, which are much appreciated by the children. Patients are kept for several months if necessary, and are not discharged till convalescence is fully established.—I am, etc.,

London, N.W., June 13th. J. ANDERSON SMITH.

DISEASED TONSILS AND HEART DISEASE.

SIR,—I wish to express my entire agreement with Dr. Herbert Tilley in his definitions of "diseased tonsils" (June 16th, p. 1038). Apart from the history of severe or repeated tonsillar infection, the evidence of such infection is better sought in the presence of enlarged glands behind the angle of the jaw than in the appearance of the tonsils themselves.

I expect to publish shortly a paper on the analysis of one hundred cases of rheumatic endocarditis in which definite tonsillar infection was present in 81 per cent. Enucleation was performed in thirty-six of these cases. The result of the operation was so beneficial in the majority that, in my opinion, the question to be solved is how late in the course of the endocardial disease can benefit be expected from the removal of the focus of infection.

The best results can never be obtained from the operation

of tonsillectomy so long as the patient returns to the environment in which he first contracted rheumatic infection. The ideal treatment consists in the removal, first of the septic tonsils from the patient, and then of the patient from his old surroundings to the happy conditions described by Dr. A. P. Thomson in the same issue of your JOURNAL.—I am, etc.,

Norwich, June 17th. HUBERT J. STARLING.

WHAT IS A "DISEASED" TONSIL?

SIR,—Mr. Stuart Carruthers's letter in your issue of June 9th (p. 995) recalls at least one other which dealt with the same subject—namely, that of "Clinic" (July 9th, 1921).

Mr. Carruthers calls for a "definition." Is it possible to make a general one, to order, in this way? And if so, of what practical use would that be? Perhaps that is why, as he states, one has never been forthcoming.

The real question is, surely, whether in such and such a case under consideration the tonsils can be held responsible for certain pathological symptoms.

There is obviously no difficulty in recognizing as "diseased" or "unhealthy" tonsils which are acutely infected, subject to malignant changes, or the invasion of serious chronic disorders. This class, however, is small. I think there should be no misgivings about pronouncing tonsils of the following types "diseased"—even if there should be no symptoms at the moment:

(*a*) Those which are grossly hypertrophied, causing obstruction. (There must be a limit to the enlargement which is not considered pathological.)

(*b*) Those associated with persistent enlargement of the glands behind the angle of the jaw in the absence of oral sepsis (teeth, gums, etc.).

(*c*) Those, however small, from which can be expressed foul-smelling matter (although the crypts always contain micro-organisms, such contents cannot be passed as non-pathogenic—if "pus" is not a sign of disease here why should it be considered so in tooth sockets or accessory sinuses?).

(*d*) The tonsil "with a past"—frequent attacks of tonsillitis, "colds" always starting in the throat, past "quinsies"—although looking quiet and harmless when inspected.

These four types comprise by far the majority of cases with which we are concerned. What then remains? A comparatively small group of cases with local or general symptoms, which one has learnt by experience to associate with "diseased" tonsils, but with no definite macroscopic signs in the tonsils. Whether the latter are "diseased" or "healthy" is purely a relative question, and what may be producing symptoms in A would fail to do so in B. One cannot be dogmatic, in such cases—one cannot be "absolutely sure." As in other surgical problems, one can only arrive at a verdict in each individual case by considering all the evidence at hand in the light of personal experience, and that accumulated and recorded by others, unassisted by any "definitions."—I am, etc.,

Worcester, June 11th. J. B. CAVENAGH.

SIR,—In the BRITISH MEDICAL JOURNAL of June 9th Dr. Carruthers suggests that a diseased tonsil is one which shows intracellular micro-organisms on section. But the lymphocytes in the tonsil are continually migrating through the epithelium, phagocyting the bacteria in the crypts, and returning into the lymph nodules, where the bacteria are destroyed and some measure of immunity attained. Thus intracellular micro-organisms are probably always present in every tonsil after birth, though not often easy of demonstration. This constant ingestion of bacteria is most easily studied in certain other subepithelial lymphatic glands—namely, the vermiform appendix and Peyer's patches in the rabbit, where the Gram-positive nature of the organisms enables them to be easily traced for a long time after they have been ingested. Thousands of intracellular bacilli can be counted in one high-power field of the microscope in the lymphoid tissue of any *healthy* rabbit's appendix. I have collected the evidence in support of the above statements in *Immunity in Health: the Function of the Tonsils and other Subepithelial Lymphatic Glands in the Bodily Economy.*

The presence of intracellular organisms, therefore, may merely show that the tonsil is functioning normally.—I am, etc.,

London, June 16th. KENELM H. DIGBY.

DEFECTIVE LIPOLYSIS IN DIABETES AND CANCER.

SIR,—The discoverers of insulin have shown that this substance not only has an effect on the blood sugar but also on the utilization of fat. This utilization of fat is defective in diabetes, and insulin markedly improves it and rapidly removes any lipaemia if present. This latter action is especially interesting to me because for many years various aspects of the fat-splitting action of the pancreas have been the object of research by myself and other workers in this laboratory.[1] The main outcome of this work has been to show that lipase in extracts of the pancreas consists of two components, one of which, following current nomenclature, is spoken of as the *coenzyme* and the other *inactive lipase*. The coenzyme when produced in the pancreas, or after injection, appears to be distributed by the blood to the tissues, activating the lipases there. We concluded further that this activating property is due to organic and inorganic phosphates. Whether the islets of Langerhans are responsible for the formation of the coenzyme or not appears uncertain. The same uncertainty is seen in De Witt's experimental work.[2]

My object in writing is to call the attention of workers to this aspect of the question, and more especially in relation to cancer. My experiments showed that tissue lipolysis is defective in cancer. I am convinced that increased tissue lipolysis is a factor in the defensive processes of the body, and this is particularly the case in cancer. Anything which increases this action in that disease should not be lost sight of.—I am, etc.,

J. A. SHAW-MACKENZIE, M.D.Lond.

Physiological Laboratory, King's College, London, W.C., June 8th.

REFERENCES.

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[2] De Witt, L. M.: 1906, *Journ. Exp. Med.*, 8, p. 193.

HERPES ZOSTER WITH LOCALIZED MUSCULAR PARALYSIS.

SIR,—In his article in the BRITISH MEDICAL JOURNAL for June 9th (p. 970) Dr. C. Worster-Drought writes that in an extensive search he has been able to find very few recorded cases of paralysis accompanying or following herpes zoster of the trunk. On October 21st, 1915, I showed at the Dermatological Section of the Royal Society of Medicine a man, aged 64, in whom paralysis of the left upper extremity occurred on June 16th; it was later (about June 23rd) that an eruption of typical herpes zoster was first noticed. The eruption involved the left side of the head and neck, the left clavicular region and shoulder, and the upper front of the left side of the chest. The Wassermann reaction was positive. Antisyphilitic treatment was employed, and, whether owing to this treatment and faradization or not, the condition gradually considerably improved. Amongst cases not referred to by Dr. Worster-Drought are the following:

C. Handfield Jones (*Med. Times and Gazette*, 1882, i, p. 468) described the case of a man, aged 64, in whom herpes zoster of the left arm was followed by muscular wasting of the affected extremity.

Sir William Broadbent (BRITISH MEDICAL JOURNAL, October 27th, 1866, p. 460) narrated the case of a woman, aged 74, in whom herpes zoster in the distribution of branches of the brachial plexus was followed by partial paralysis in corresponding motor nerves.

In one of G. Waller's cases (abstract in BRITISH MEDICAL JOURNAL, 1885, ii, p. 560) right brachial herpes zoster was followed by paralysis of the right arm.

In a man, aged 35 (E. Schwimmer, *Die neuropatischen Dermatosen*, Vienna, 1883, p. 139), a blow on one shoulder was followed by herpes zoster of that region and then by sensory disturbance and incomplete paralysis of the arm.

In one of the cases recorded by E. F. Buzzard (*Brain*, 1902, xxv, p. 299) brachial herpes zoster was accompanied by paralysis of the deltoid muscle on the affected side.

S. Vere Pearson (*Trans. Clin. Soc., Lond.*, 1903, xxxvi, p. 268) reported the case of a painter, aged 52, who on getting up one morning noticed sharp, burning pain about the left arm and inability to move the upper part of the arm. On the following day an eruption of herpes zoster appeared on the left arm, which extended from the shoulder to the wrist. There was complete paralysis of the left deltoid and infraspinatus muscles, with some atrophy, and there was partial paralysis of the latissimus dorsi muscle. The herpes gradually healed and the affected muscles commenced slowly to regain power.

It was in a case of herpes zoster with motor symptoms that Magnus (quoted by A. Sunde, *Deut. med. Woch.*, 1913, xxxix, p. 849) found diplococci in the anterior horn of spinal grey matter and ordinary inflammatory changes in the spinal ganglia.

Souques and Mlle M. Henry (Soc. de Neurol., Paris, November 7th, 1918) showed a woman, in whom paralysis of the fifth and sixth cervical segments was followed by muscular paralysis of the deltoid, etc., having a radicular distribution.

A. Lemierre and P. Lantuejoul (Soc. Méd. des Hôpitaux de Paris, November 8th, 1918) described a case of cervical herpes zoster with motor troubles.

Bocca (Soc. des Sciences Méd. de Lyon, November 24th, 1920) communicated the case of a woman, aged 61, with herpes zoster of the left upper extremity followed by radicular paresis in that limb.

In the distribution of the paralysis Dr. Worster-Drought's case seems to differ from almost all others.—I am, etc.,

London, W., June 9th. F. PARKES WEBER.

THE VENEREAL DISEASE REPORT.

SIR,—I beg to inform you that an important and representative meeting of the Executive Committee of this Society was held yesterday under the chairmanship of Lord Willoughby de Broke, when Sir William Arbuthnot Lane, Sir Bryan Donkin, Sir James Porter, Mr. Basil Peto, M.P., Dr. Sequeira, and others were present.

The following resolution was proposed by me and seconded by Dr. Jane Lorimer Hawthorne (vice-chairman of the Women's Committee) and was carried unanimously:

> "That the Executive Committee accepts the Trevethin Report as a document supporting the essentials of the policy of the Society for the Prevention of Venereal Disease, as defined in their policy pamphlet, and especially welcomes the recommendation 'that the law should be altered so as to permit properly qualified chemists to sell *ad hoc* disinfectants, provided such disinfectants are sold in a form approved, and with instructions for use approved, by some competent authority,' as set forth in Clause 14 of the Report."

—I am, etc.,

London, W.1, June 15th. H. WANSEY BAYLY, Hon. Sec., S.P.V.D.

SIR,—The report of Lord Trevethin's Committee has been read with interest and with qualified approval by many in the profession; but it is not easy for some of us to appreciate the difficulty that you and the Committee have found in determining which is the most suitable official body to approve the form of *ad hoc* disinfectants and to supervise their sale by qualified chemists.

For years past the Government has deputed the highly important task of propaganda work to the National Council for Combating Venereal Diseases, at whose disposal Government funds have been freely placed to enable them to carry out the work. Would it not be wise to entrust this other highly important task—the issue of disinfectants—to the Society for the Prevention of Venereal Disease, in whose ranks are to be found those who have devoted most time to the study of this difficult question? This surely is the most obvious and equitable way of burying the hatchet.—I am, etc.,

ROBERT FORGAN.

Carnwarth, Lanarkshire, June 18th.

DIPHTHERIA ANTITOXIN ON SUSPICION.

SIR,—In connexion with the possible development of an anaphylactic reaction following the injection of antitoxic serum in previously injected persons, Dr. Sichel asks two pertinent questions, which, however, are difficult to answer categorically.

His first question—namely, What is the chance of any particular individual developing symptoms of anaphylaxis, if reinjected after the ten days' or so interval of safety?—is one of increasing importance by reason of the extensive use of prophylactic injections generally. The answer to this question is that every person injected must be regarded as a law unto himself, since, in view of the fact that with the exception of an increased liability to serum disturbance evinced by asthmatic subjects, we really have no knowledge of any personal factor indicative of supersensitization. No predisposition has been shown in respect to either dosage, family, or sex, though I am inclined to think that age exerts some influence. I base this belief, however, in respect to age liability on observations on serum sickness as it occurs in persons primarily injected. Most of the really severe and accelerated reactions that I have witnessed have been in adults or older children, and partly on this account, and partly to avoid unnecessary sensitization, I never advise giving prophylactic injections of antidiphtheritic serum to grown-up persons, if under medical observation.

In answer to Dr. Sichel's further question—How long does the liability to anaphylactic disturbance persist?—it may be asserted that expert opinion tends to the belief that after the lapse of two or three years the risk of anaphylaxis is very slight, though the issue is necessarily confused by the fact that idiosyncrasy may determine a severe reaction after a dose of serum, quite apart from previous sensitization.

Experience tends to show that the likelihood of serious anaphylactic symptoms occurring is much exaggerated, and it must be remembered, as Dr. Sichel points out, that an equally severe reaction may occur after a primary injection.—I am, etc.,

London, S.W., June 19th. F. FOORD CAIGER.

ETHER *VERSUS* CHLOROFORM.

SIR,—Dr. McNamara's attack upon the use of chloroform in England (June 9th, p. 996), where he says "death under anaesthesia is extremely common," carries no conviction to me. "Extremely common" is a loose phrase which, I believe, no statistics justify. During the war I anaesthetized hundreds of our wounded, and almost always used chloroform on a Skinner's mask; but there were no deaths.

Chloroform has the advantage of not irritating the bronchial tubes, of easily controlling movement, and of seldom causing after-sickness, if given with proper restraint. By starting slowly, keeping the pupil small, and, without touching the eyeball, keeping the palpebral reflex just absent, you can go on for hours with an average use of one ounce of chloroform per hour. Of this the patient respires but a small proportion. A few drops of ether occasionally are often helpful.

Ether as an anaesthetic requires a complicated apparatus, as it freezes on a mask, and evaporates uncertainly in consequence. It irritates the bronchi, necessitates a large quantity of anaesthetic, and causes after-sickness.

From what I have seen of the administration of an anaesthetic abroad I am not astonished that ether should be popular. Ether lets off the anaesthetist, but is often inconsiderate to the patient, and I doubt, if after-effects could be taken into account and tabulated, whether ether would not present the darker picture. My belief is that chloroform is the better anaesthetic in good hands, and ether the better in bad, and that deaths under anaesthesia are very rarely the direct fault of either anaesthetic.—I am, etc.,

Knowle, Topsham, Devon, June 11th. D. W. SAMWAYS.

THE DRUG HABIT.

SIR,—I have read the article by Dr. W. E. Dixon (March 31st, p. 543) with great interest, but in parts with great concern. That any scientific man should cite the findings of the Opium Commission of 1895 is amazing. I think one may fairly state that its general findings were contrary to the mass of evidence presented to it, and that among all except a very small minority its findings on the effect of opium smoking are utterly discredited.

So much so that the Medical Committee of the League of Nations, which is composed of experts on this subject from all countries, states "that medical use should be considered the only legitimate use, and that all non-medical use should be recognized as an abuse, and also that in the opinion of the doctors the use of opium as a stimulant could not be considered legitimate even in tropical countries."

This opinion would be endorsed without hesitation by the

medical men of China, who have had unrivalled opportunity of dealing with the vast number of opium smokers who have in the past years come to our hospitals.

To speak of an opium smoker as not forming a strong craving, and as being easily cured, and to add that "withdrawal symptoms are never observed," is simply not true. Where Dr. Dixon gets his information I do not know, but anyone who has been in charge, as I have been, of wards for the cure of opium addicts knows that the contrary is the truth. It is a rare thing for an opium smoker to pass through his cure without intense misery, especially manifesting itself in the form of diarrhoea, and the craving is so strong that a true smoker will do anything to obtain the drug.

I am sorry that Dr. Dixon should hint from a single abnormal case that the morphine habit can be acquired and given up without much inconvenience by a normal person. It may be argued that I am reading more into his words than he means to imply, but I have seen case after case where apparently normal persons, having acquired a painful disease, have taken to morphine injections for the relief of the pain, and have waked up after a few weeks to find themselves in the grip of a far worse disorder. It is true that those who have acquired the habit in this way are easier to cure than those who have taken to it simply for pleasure or vice, but it means on the part of anyone who is in the grip of the habit a severe struggle to get rid of it.—I am, etc.,

Peking Union Medical College, Peking, May 10th. J. PRESTON MAXWELL.

OF EATING.

SIR,—Since the dentition of the race is every day regarded as a more and more important factor in its well-being, I may perhaps be allowed to suggest that the increasing prevalence of dental disease is largely due to the neglect of instinct. Commonly we attribute the retreat of the jaw, imperfect and crowded teeth, caries, and periodontitis and many intestinal disorders to the use of soft prepared foods. Modern cooking is doubtless a factor in poor dentition, but it occurred to me long ago that even with our common food mastication would be properly carried out if children's natural instincts were allowed full play.

Horace Fletcher showed that there was, or should be normally, a reflex preventing deglutition of solids. His remedy for ill health was to re-educate this destroyed or inhibited reflex by careful mastication. No doubt good was done by this perfectly correct observation, but the fact that re-education was committed to the higher cerebral centres militated against its general recognition. Such a relegation means attention and labour. It is entirely unnecessary, and this will be recognized when it is remembered that the invariable instinct of the child, as of the savage, is to fill the mouth and to keep it full during meals. This enforces continual mastication, as nothing solid can be swallowed with a full mouth. Unhappily it has become a doctrine that such a habit is dangerous. Polite mothers and nurses, even the mothers and nurses of the poor, do their best to destroy the only way in which food is rendered so liquid that it flows down the gullet without any effect at swallowing. Should anyone doubt this one trial will convince him of its truth. It may be objected that if it were generally adopted there would be an end of polite conversation at the dining table. I am not prepared to estimate the real value of this polite conversation, but I doubt if it can be set against decent dentition or decent health. In any case, if such conversation among adults is too valuable to be lost—and I have known occasions when this could be said of it—the chatter of children, which they would not indulge in unless wrongly trained, should not be allowed to interfere so greatly with proper exercise of the teeth and jaws as to prevent perfect late dentition. When this is established conversation cannot destroy it, and on every occasion when it is possible to eat in the instinctive manner properly trained people and adults will at once revert to nature instead of eating like cormorants or ravens with three bites and a concealed gulp.—I am, etc.,

London, N.W., June 7th. MORLEY ROBERTS.

HOSPITAL STAFFS AND INCOME TAX.

SIR,—Ventilation of this subject in your columns would be interesting and valuable. The main question can be stated thus:

A member of the medical profession, mainly dependent on earned income, attends at a hospital for so many hours a week as one of the honorary staff. If he were a paid official, which he is not, he would be charged income tax on his salary. It seems to me that, in equity, he should be entitled to a deduction for the time spent in this public work. The difficulty is to assess the rate, as allowance must be made for experience gained, increased efficiency, and the age and experience of the member.

Before the war the out-of-pocket cost to the medical man of such work was not excessive, and then, as now, it was regarded as a privilege. At the present time, with the rate of income tax and the cost of living both high, the out-of-pocket cost is considerable. Allowable deductions at present compensate inadequately for the style of housing and service that such a man is obliged to keep up. In many provincial centres the public work is out of all proportion to private remuneration, and this tends to result in a lowering of standard as regards advanced and research work, there being no margin to pay for the clerical part of it. The factor of cost must deter some whose services in these and allied matters would be of use, both to the public and to the professed subjects, from venturing at all, and in the case of some already so engaged may cause them loss.

In the event of a sufficient body of opinion being expressed, and of some kind of flat rate deduction being suggested for day and night work, perhaps steps could be taken to bring the matter before the income tax authorities.—I am, etc.,

Aberdeen, June 16th. G. H. COLT.

A PROTEST.

SIR,—In your issue of June 16th you published an article of mine relating to a case of foreign bodies in the stomach, and the very same evening an abstract of the article appeared in the lay press, giving my name, that of the hospital, and, to crown all, under sensational and objectionable headlines.

I would like, therefore, to take immediate opportunity of registering a strong protest against this freedom on the part of the newspapers to publish, without permission, any matter which appears in a medical journal; first, because, as in the present instance, the patient may read the account of same and run the grave risk of a relapse in her mental condition, and secondly, because there might arise in the minds of many people, both lay and professional, the erroneous impression that such publication had been permitted by the doctor in question for the purpose of self-advertisement.

I would further suggest that some steps should be taken to enable the Editor of the BRITISH MEDICAL JOURNAL to control the depredations of these sensation-loving and unthinking newspaper reporters, when they seek to cull cheap copy from its pages. Had I thought that such as the above would happen, my article would never have been sent for publication.—I am, etc.,

A. GEORGE BRAND.

Ayr, June 17th.

*** We sympathize with our correspondent and associate ourselves with his protest. But it is not easy to find a remedy. Matter published in the BRITISH MEDICAL JOURNAL is copyright, but the law of copyright is so ill defined that redress is difficult.

NURSES' REGISTRATION.

WE have received several letters from nurses calling in question the accuracy of some of the statements in Dr. Skene's letter published on June 9th (p. 997). The points raised seem to have been met in the discussion in the House of Commons, a report of which is published at page 1069.

Obituary.

HENRY TROUTBECK, M.A., M.B., B.CH.,

Medical Officer to Westminster School.

WE record with regret the death of Dr. Henry Troutbeck, of Ashley Gardens, Westminster, at the age of 57. About twelve years ago Dr. Troutbeck appears to have had slight symptoms of angina pectoris. On the morning of June 3rd last he seemed in perfect health; but on his returning from visiting patients he became very ill and had paroxysms of pain for nearly an hour. Recognizing that angina pectoris had reappeared, he directed his wife to give him injections of morphine and such other remedies as were at hand; but they were of no avail.

Henry Troutbeck was a son of the late Canon Troutbeck of Westminster; his brother, the late Mr. John Troutbeck, was for many years Coroner for Westminster. He was educated at Westminster School and Caius College, Cambridge, where he obtained honours in the Natural Sciences Tripos, and was for a short time a junior demonstrator in the University physiological laboratories. After studying at St. Bartholomew's Hospital he graduated M.B., B.Ch. in 1892, and obtained a post as house-physician. It was during his residence at St. Bartholomew's as house-physician that he produced a very clever series of caricatures of the hospital staff. He served next as house-surgeon at the East London Hospital for Children, Shadwell. After starting general practice in Ashley Gardens, Dr. Troutbeck became medical officer to Westminster School. He was a member of the Westminster and Holborn Division of the British Medical Association.

At the inquest Mr. Ingleby Oddie, the Coroner, commented upon the calmness and bravery of Dr. Troutbeck when he knew that he was dying, and described him as justly popular, and a kindly, efficient, and sympathetic medical man.

E. J. STEEGMANN, O.B.E., M.B., B.S.

DR. E. J. STEEGMANN, a distinguished worker in many departments of public health, passed away on June 8th. He came of an old Nottingham family, was educated at St. Mary's Hospital and at Durham University, and held resident posts at his own hospital and at the Brompton Hospital. After a short period of general practice he turned to public health work, which had always attracted him, and devoted himself to that field for the rest of his life. He held the post of Lecturer on Hygiene and Public Health at St. Mary's Hospital and for a time was medical officer of health for the Heston and Isleworth Urban District.

For ten years, from 1901, he was secretary to the Royal Commission on human and animal tuberculosis, which followed on Koch's startling pronouncement that infection of man by animal tuberculosis was negligible. Dr. Steegmann, who was a man of signal ability and administrative capacity, threw himself with great ardour into the work of the Commission, and I well remember the intense interest he took in the experimental investigations and the wholehearted admiration he felt for the eminent men with whom he worked.

He was one of the earliest medical officers to join the R.N.V.R., in which at the time of his death he was Surgeon Commander. He went on active service in 1914 with the Fleet and afterwards did important special sanitary work for the Admiralty. It was on his advice that the system of Naval Sanitary Officers, which is now adopted at the large ports in this country, was introduced.

After the war he was employed in international medical work at the Ministry of Health, and later took a leading part in organizing the Section of Hygiene for the League of Nations.

In all, a record of public work of which any man might be proud, gallantly done in spite of ill health and almost lifelong pain. In public life Dr. Steegmann proved himself to be a man of great ability and enthusiasm with a marked power of impressing his views on others. In private life his friends will remember him as a bright, courageous spirit, whose loyal affection was always the same in spite of the lapse of time.

J. J. P.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE Professor of Anatomy has made the following appointments in the Anatomy Department: Senior Demonstrator, Dr. A. B. Appleton; Junior Demonstrators, Mr. N. G. Reid and Mr. A. Hopkinson; Additional Demonstrator, Mr. V. C. Pennell.

At a congregation held on June 16th the following medical degrees were conferred:

M.D.—G. W. Goodhart, G. W. Mitchell.
B.CH.—E. C. Curwen.

QUEEN'S UNIVERSITY, BELFAST.

AT a meeting of the Senate held on June 13th Dr. W. W. D. Thomson was appointed professor of medicine in the University, Dr. Andrew Fullerton professor of surgery, and Dr. Percival Crymble lecturer in operative surgery and applied anatomy. A resolution was adopted placing on record the Senate's high appreciation of the invaluable services rendered to the University by Professor Lindsay during his tenure of the chair of medicine from 1899 to 1923.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN Ordinary Council was held on June 14th, 1923, when Sir Anthony Bowlby, President, was in the chair.

Mr. J. Howard Mummery, C.B.E., was introduced, and admitted a Fellow of the College.

Issue of Diplomas.

Diplomas of Fellowship were granted to the following twenty-four candidates found qualified at the recent examination:

W. Anderson, H. A. Brookes, A. G. Bryce, C. H. Carlton, G. R. B. Colquhoun, D. I. Currie, F. P. Fouché, G. J. Gillam, W. J. Lyle, N. Makar, P. J. Moir, J. W. G. Phillips, J. McL. Pinkerton, J. E. Purves, S. D. Rhind, W. Salisbury, R. S. Scott, W. Shaw, N. B. Smith, G. F. Syms, D. R. Wheeler, E. R. Wheeler, R. L. Williams, S. H. Woods.

Licences in Dental Surgery were also granted to seventy-six candidates.

Examiners.

The following eight members of the Board of Examiners in Anatomy and Physiology for the Fellowship were elected for the ensuing year:

Anatomy.—J. Ernest Fraser, G. Gordon-Taylor, W. F. Haslam, William Wright. *Physiology.*—David de Souza, John Mellanby, Ffrangcon Roberts, A. Rendle Short.

The following were elected Examiners under the Conjoint Examining Board for the ensuing year:

Elementary Biology.—J. P. Hill, T. W. Shore. *Anatomy.*—Henry A. Harris, David Hepburn, John Basil Hume. *Physiology.*—C. Lovatt Evans, H. E. Roaf. *Midwifery.*—Eardley L. Holland, C. Hubert Roberts, G. D. Robinson, Donald W. Roy. *Public Health.*—Part I: Sir Frederick W. Andrewes. Part II: Francis J. Stevens. *Tropical Medicine and Hygiene.*—George C. Low, H. B. G. Newham. *Ophthalmic Medicine and Surgery.*—Part I: H. Willoughby Lyle, Sir J. Herbert Parsons. Part II: Malcolm I. Hepburn. *Psychological Medicine.*—Sir Frederick Mott.

The resignation of Mr. F. F. Burghard from the Court of Examiners will take effect on the completion of the pass examination for the Membership in July. The vacancy on the Court thus occasioned will be filled up at the Ordinary Council on July 31st.

The vacancy caused by the expiration of Mr. N. G. Bennett's term of office on the Board of Examiners in Dental Surgery will be filled up at the Ordinary Council on July 31st.

The date fixed for the Ordinary Council following the Quarterly Council in July was Tuesday, July 31st.

The last day for sending in votes for the election to the College Council is July 5th, 2 p.m.

The Services.

OPERATIONS IN WAZIRISTAN.

THE names of the following medical officers have been brought to notice for distinguished service during the operations in Waziristan, April, 1921, to December, 1921, by His Excellency General Lord Rawlinson of Trent, in a dispatch dated May 24th, 1922:

Royal Army Medical Corps: Captain (acting Major) G. A. E. Argo, M.C., Captain (temporary Major) W. Frier, Colonel A. E. C. Keble, C.B., C.M.G., D.S.O., Captain (temporary Major) J. M. Mackenzie, M.C., Captain (acting Major) M. P. Power, M.C., Captain (acting Major) B. C. O. Sheridan, M.C.

Indian Medical Services.: Temporary Captain P. P. Daruwalla, Captain (acting Major) P. A. Dargan, temporary Captain M. A. Mithavala, temporary Captain J. S. Pinto, Captain (acting Lieut.-Colonel) J. W. Van Reenan, Major (acting Lieut.-Colonel) W. D. Wright.

Medical News.

THE Prince of Wales, President of Guy's Hospital, will open the new anatomy, biology, and physics department of the Medical School on Monday, July 2nd, at 3 p.m.

AT a meeting of the Senate of Queen's University, Belfast, held on June 14th, it was agreed to confer the degree of LL.D. *honoris causa* on Major-General Sir R. Havelock Charles, G.C.V.O., K.C.S.I., Medical Adviser to the India Office and Sergeant-Surgeon to the King, in recognition of his public services to India and the Empire.

THE thirty-eighth annual meeting of the Caledonian Medical Society will be held in the Aberdeen Medico-Chirurgical Society's Hall, 29, King Street, Aberdeen, on Friday, June 29th, when Dr. David Rorie, D.S.O., will take the chair at 2.30 p.m. The annual dinner will take place on the same evening at the Palace Hotel, Aberdeen. This is the first occasion on which the annual meeting of the society is to be held in Aberdeen, and it is hoped to maintain, both as regards numbers and enthusiasm, the high level of the Stonehaven meeting in 1912, the only other occasion when the society met in the north-east of Scotland.

THE Mayor of Bath, Alderman Cedric Chivers, has assumed the responsibility for the expenses of a scientific research on the therapeutic properties of the Bath waters. The research will be carried out during the course of the summer in the Royal Mineral Water Hospital under the direction of Dr. Raiment of Oxford, assisted by Mr. G. L. Peskett, in co-operation with the medical staff of the hospital.

THE Council of Epsom College will shortly award several France pensions of £30 a year to medical men. Candidates must be not less than 55 years of age, and their income, independent of any allowance from the College, must not exceed £100 a year. The Council will also award one Grewcock pension of £50 a year. In this case there is no limitation as to age, but candidates must be legally qualified medical men who have retired from professional work, and who, in the opinion of the Council, are in need of the pension. There is the same income limit as in the case of France pensioners, and special consideration will be given to the claims of candidates having association with Worcestershire, Lincolnshire, or Carmarthenshire. Forms of application can be obtained from the secretary, Mr. J. B. Lamb, 49, Bedford Square, W.C.1.

SOME time ago we gave an account of the hospital established at Cardigan as a war memorial. It is staffed by practitioners in the county and Sir John Lynn-Thomas, who resides in the neighbourhood, is the director of the surgical clinic. The first annual meeting of the hospital was held recently, when it was reported that during the ten months for which it had actually been at work 167 cases had been treated; of these 88 were in-patients. Sixty-three operations were performed and 28 cases were submitted to *x*-ray examination for diagnostic purposes. The hospital when it opened had six beds, but it was soon found necessary to increase the number to ten and to add two cots. A vote of thanks to the staff was acknowledged by Sir John Lynn-Thomas.

DR. T. W. NAYLOR BARLOW, O.B.E., of Wallasey, has been elected president of the Society of Medical Officers of Health for the session 1923–24. He will be installed on Friday, October 19th, and will preside at the annual dinner of the society on the evening of the same day.

THE QUEEN has sent a donation of £50 to the Professional Classes Aid Council, 251, Brompton Road, S.W.3.

THE President of the Royal Society, Chairman of the General Board of the National Physical Laboratory, has issued invitations to visit the Laboratory, Teddington, on the afternoon of Tuesday, June 26th.

DR. A. H. G. BURTON, of the Middle Temple, and Dr. Charles Greer, of Gray's Inn, were called to the Bar on June 13th.

AT the annual meeting of the governors of Queen Charlotte's Lying-in Hospital, London, Lord Howard de Walden referred to the serious financial position of the institution. There was a debt of £20,000, the hospital had had to deposit all its securities against the bank overdraft, and the committee to raise money on the security of the freehold. The number of patients seeking admission was greater than ever, and the accommodation in the hospital for post-graduate students, medical students, maternity nurses, and pupil midwives, who came to the hospital from all parts of the world, was quite inadequate for the demands made upon it. It was impossible to carry out the necessary extensions and alterations until the debt was paid off, and he made an earnest appeal for additional financial support.

A RECEPTION will be held at University College, London, on Saturday, July 7th, from 3.30 to 7 p.m., when the new anatomy building and the extensions of the physiology and engineering departments will be open to inspection. The secretary requests that old students of the college who have not recently communicated their addresses should send them to him.

THE KING has approved the appointment of the Honourable Dr. Alexander Campbell to be a member of the Legislative Council of the Colony of Newfoundland.

AN advanced course in oto-rhino-laryngology intended for specialists will be held at the Bordeaux Faculty of Medicine from July 23rd to August 4th under the direction of Professor Moure and Dr. Portmann. It will include operations, examination of patients, laboratory examinations and lectures. The fee of 150 francs is payable to the secretariat, Faculté de Médecine, Bordeaux.

A LECTURE on the stomach from the radiologist's standpoint will be delivered by Dr. G. E. Vilvandré in the Anatomical Theatre of the London Hospital Medical College on Thursday, June 28th, at 4.15 p.m. The lecture is intended for senior students of the hospital and to post-graduates, who are cordially invited.

APPLICATIONS for entry for the Savill Memorial prize (value £15) must be sent in to the Secretary of the West End Hospital for Nervous Diseases, 73, Welbeck Street, W.1, by July 16th. Post-graduate and undergraduate medical students who have visited the hospital during the year 1922–23 are eligible. A thesis on a neurological subject at the discretion of the candidate must be received at the hospital by October 1st.

THE Fellowship of Medicine has arranged for a special course in neurology at the West End Hospital for Nervous Diseases from June 25th to July 27th. There will be demonstrations each day in the out-patient department and lecture demonstrations dealing with the diagnosis and treatment of nervous disease will be given three times a week by members of the staff. A special course on diseases of children has been arranged at the Royal Waterloo Hospital from July 16th to August 4th. General refresher and special courses in cardiology, dermatology, and ophthalmology have also been arranged during July and August. Full particulars can be obtained on application to the Secretary, Fellowship of Medicine, 1, Wimpole Street, W.1.

THE University of Durham proposes to confer the degree of D.C.L. *honoris causa* upon Sir Anthony A. Bowlby, K.C.B., K.C.M.G., K.C.V.O., President of the Royal College of Surgeons of England, consulting surgeon to St. Bartholomew's Hospital, and Surgeon-in-Ordinary to the King. It is expected that Sir Anthony Bowlby will attend to receive the degree at the convocation on June 26th.

THE annual meeting of the Poor Law Medical Officers' Association will be held at the house of the Society of Medical Officers of Health, 1, Upper Montague Street, W.C.1, on Thursday, June 28th. Sir Arthur Newsholme, K.C.B., M.D., the president, will take the chair at 4.15 p.m. Poor Law medical officers are earnestly requested to attend.

COMMEMORATION DAY was celebrated at Livingstone College, Leyton, on June 13th, when a large assembly gathered in the grounds of the college, with Sir Leonard Rogers in the chair. The principal, Dr. Tom Jays, and the treasurer, Mr. L. R. Barclay, made statements on the work and the financial position of the college, which is not yet self-supporting. Sir Leonard Rogers referred to the excellent work the college does in training missionaries to look after their own health and to give medical aid to others in distant parts of the Empire where more skilled medical assistance was lacking.

THE David Syme Research Prize for 1923, presented to the University of Melbourne for research work in biology, chemistry, geology, and natural philosophy, has been awarded to Dr. Frank Longstaff Apperly, senior lecturer in pathology at the University. His paper dealt with the diagnosis and treatment of diseases of the stomach. Dr. Apperly was a Rhodes scholar in 1910 at Oxford. In acknowledging the honour he strongly advocated the establishment of an institute of research, where important problems that were purely Australian, such as hydatids and hookworm, might be thoroughly investigated.

DR. A. ROLLIER will hold a course of heliotherapy at Leysin from August 13th to 18th. Further information can be obtained from Dr. Rollier, Leysin-Village, Switzerland.

DR. DUBOIS has succeeded Professor Wertheimer in the chair of physiology at the Lille Faculty of Medicine.

MESSRS. BELL intend shortly to publish a book entitled *The Structure of the Atom* by Professor Andrade of Woolwich, and a new and enlarged edition of *X Rays and Crystal Structure* by Sir William Bragg and Professor W. L. Bragg.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

SALICYLATE INJECTIONS FOR VARICOSE VEINS.

DR. W. A. MURRAY (British Hospital, Oporto) writes: I should be much obliged if any of your readers could give me particulars of the treatment of varicose veins by injection of sodium salicylate. The points on which I should like advice are: (1) Has the treatment proved successful? (2) What is the dose and technique of administration? (3) Are there any special dangers to be avoided—for example, thrombosis extending up the veins?

INCOME TAX.

"W. H. L."—(1) A and B have changed the ratio in which they share the partnership profits from two-thirds and one-third to half and half as from January 1st, 1923. (2) B bought a motor cycle in 1920 for £130 and sold it in 1923 for £62, buying a motor car in its place for £525. What is he "entitled to put down to this year's expenses"?

*** (1) We suggest that "W. H. L." should request the inspector of taxes to let the firm have a statement setting out the computation of each partner's share of tax on the basis of the change on January 1st, 1923. Assuming that this is found to be correct, each partner should contribute towards the July tax (which is the second instalment of the total duty payable for the year to April 5th, 1923) the amount necessary to increase his January, 1923, payment to the total amount due from him according to the revised statement. (2) £130−£62=£68 can be included in the expenses in computing the profits for 1923 for the purpose of the average amount assessable in subsequent years.

LETTERS, NOTES, ETC.

SODIUM OR POTASSIUM SALTS.

DR. F. G. CAWSTON (Durban) writes: I do not consider that there is sufficient clinical evidence to support the contention that the sodium salt is preferable to the potassium where patients are being treated with intravenous antimony. In my own experience with these drugs I have found patients much more subject to muscular pains where the sodium salt is used, and, since I have adopted the procedure of using tartar emetic in doses ranging from 1/2 to 1½ grains dissolved in not more than 3 cubic centimetres of saline just before the injection, I have noted none of those unpleasant toxic effects which I sometimes observed when using distilled water or when injecting the sodium salt. I have not been able to note any more beneficial effect from the injection of 2 grains of the sodium preparation than 1½ grains of the potassium in several cases of bilharzia infection that I have treated, and in some patients suffering from extensive condylomatous conditions the experience was the same. In 1920 the Minister of Agriculture promised me that those methods of administering antimony which were being used with success in the treatment of bilharzia disease in Natal should be given a thorough trial in the treatment of cattle suffering from nagana in Zululand. Fortunately Mr. H. H. Curson, M.R.C.V.S., who had carried out a series of tests on fluke-infested sheep, using the freshly dissolved tartar emetic solution as I had demonstrated it to him, was placed in charge of the experimental station, and the treatment resulted, according to the Department of Agriculture, "in immediate success." Though I offered him all the sodium preparation I had on hand, as I had hoped that cattle might be able to tolerate the drug better than human beings, he confined himself to the potassium salt, and we have yet to find a more economical and effective remedy for either nagana or bilharzia disease.

INTRAVENOUS ACRIFLAVINE FOR GONORRHOEA.

DR. M. W. BROWDY (London, W.) writes: In the Epitome of Current Medical Literature in the BRITISH MEDICAL JOURNAL (June 16th, 1923, para. 500) G. H. Wood is quoted as advocating intravenous injections of acriflavine in the treatment of acute gonorrhoea. I described this method of treatment in the *Practitioner*, October, 1921, with satisfactory results. I believe I was the first to suggest it.

METHYLATED SPIRIT DRINKING.

WE observe that in his last annual report Dr. F. S. D. Hogg, medical superintendent of Dairymple House, Rickmansworth, notes an increasing number of cases of methylated spirit drinking among his patients. He supposes that inebriates drink this disgusting fluid (alcohol "denatured" with 10 per cent. wood naphtha and 0.25 per cent. petroleum oil) because they are short of funds or are unable to buy potable spirits except during restricted hours of sale. Dr. Hogg has his own way of helping patients to overcome any temptation to indulge in secret draughts of methylated spirit. For the past twenty years such methylated spirit as has been used in the institution has been "doctored" with tartar emetic and marked "poison." He says—and we can well believe him—that it is very rare for a patient to sample this mixture, and he has never known one to try it twice. He accordingly suggests that all the methylated spirit sold to the public might well have this addition, which would add but a trifle to its cost. It has often surprised us that pharmacological advice is not sought in regard to the "denaturing" of alcohol.

MEDICAL GOLFING SOCIETY.

THE Medical Golfing Society's annual summer meeting was held at Addington Golf Club on June 14th. The meeting was a great success, over ninety members competing for the various prizes. As usual, all competitions were against bogy.

Mr. H. D. Gillies (+2) won the *Lancet* Challenge Cup and Memento for the best scratch return with 4 up; also the Henry Morris Challenge Cup and Society's Gold Medal for best handicap return with 2 up. His actual score was 73.

Other results were as follows:

CLASS I.
(Handicap 9 and under.)

1st Prize.—Sir R. Cruise (2) 1 up. (Mr. H. D. Gillies was ineligible for this prize.)

2nd Prize.

	H'cap.
J. Swan	6
G. Dawson	4
Gordon Lane	9
Sir K. Goadby	8

(All square.)

Best last nine holes.
Sir K. Goadby, Gordon Lane } All square.

CLASS II.
(Handicap 10 and over.)

1st Prize.

	H'cap.
C. M. Hinds Howell ...	10
J. Cunning	13
N. B. Benjafield	16
H. L. Hatch	15
J. Clarke	14

(All square.)

Best last nine holes.

J. E. Conlson	11
L. Bathurst	11

(1 up.)

In the Foursome Sweepstakes.

1st Prize.

	H'cap.
Bruce Hamilton	12
G. A. Sutherland	6

2nd Prize.

Sir R. Cruise. Gordon Lane.	
C. R. Salisbury	16
C. H. Housden	18
J. S. H. Lewis	8
Murray Thomson	10

All ties will be played off in due course.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 29, 30, 31, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 279.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
Each additional line	0 1 6
Whole single column (three columns to page) ...	7 10 0
Half single column	3 15 0
Half page	10 0 0
Whole page	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.